OCC*info*

2006

Over 500 Occupational Profiles

Occupations by

- Title
- NOC Number
- Primary Interest
- Industry Cluster
- Production Date

Alberta
Human Resources
and Employment

This package provides labour market information to help you make career decisions. It can enhance your life and work exploration by helping you learn about the realities and requirements of various occupations. For each Occupational Profile, you can:

- Explore duties
- Explore working conditions
- Explore personal characteristics
- Explore educational and training requirements
- Understand how trends, geographic location, employment turnover, occupational growth and size of occupation impact the employment outlook
- Connect with further information to make life and work decisions.

We are constantly updating occupational information on our online version of OCCinfo. For the most current information visit **www.alis.gov.ab.ca/occinfo** The Alberta Learning Information Service (ALIS) website is Alberta's leading on-line source for career, learning and employment information. To access this and additional publications, visit **www.alis.gov.ab.ca/careershop**

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This information was accurate, to the best of our knowledge, at the time of printing. Labour market information and educational programs are subject to change, and you are encouraged to confirm with additional sources of information when making career, education and employment decisions.

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the people & workplace department

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February 14, 2006

Letter to Career Development Practitioners

Due to significant changes in the content of most occupational profiles since 2003, Alberta Human Resources and Employment has published a package of occupational profiles, industry groups and related reports for 2006.

Since *OCCINFO 2003* was printed, 46 new profiles have been produced, 479 existing Alberta occupational profiles have been updated in their entirety, and the remaining profiles have had particular sections revised (e.g. Employment and Advancement) and will be updated in their entirety and posted on the OCCINFO website in the next few months.

The new ***OCCINFO 2006*** package contains:

- Alphabetical List of Occupational Profiles
- New Occupational Profiles
- Discontinued Occupational Profiles
- Occupational Profiles by Industry
- Occupational Profile Reports by Title, Industry Cluster, National Occupational Classification (NOC) number, Primary Interest, and Production Date
- Definitions of *Employment Outlook*, *Location*, *Employment Turnover*, *Occupational Growth*, and *Size of the Occupation* as used in the Occupational Profiles
- 532 Alberta Occupational Profiles
- Occupational Profiles Index.

Keeping the Alberta occupational profiles up-to-date is an ongoing process. For this reason, the content of some of the profiles will have already changed by the time you receive this package. ***Users should check the OCCINFO website at www.alis.gov.ab.ca/occinfo for the most current copies of the profiles.***

If you have any comments or suggestions regarding this package, please complete and fax or mail back the attached ***We'd Like to Hear From You*** feedback form or e-mail info@alis.gov.ab.ca.

Feedback

We'd like to hear from you ...

OCC*info* 2006

Date

What specific information in this publication did you find useful? How did it help you?

_____

_____

_____

How could we improve this publication? What was not useful?

_____

_____

_____

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Alberta

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A. Alphabetical List of Occupational Profiles

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1. Aboriginal Liaison
2. Accommodation Manager
3. Accountant
4. Accounting Technician
5. Actor
6. Actuary
7. Acupuncturist
8. Addictions Counsellor
9. Administrative Assistant
10. Advertising Account Executive (*New Profile*)
11. Advertising Copywriter
12. Aerospace Engineer
13. Agricultural Commodity Inspector
14. Agricultural Engineer
15. Agricultural Equipment Technician
16. Agricultural Products Processing Machine Operator
17. Agrologist (*New Profile*)
18. Air Traffic Controller
19. Aircraft Maintenance Engineer
20. Airline Pilot
21. Airline Ticket Agent
22. Animal Care Attendant
23. Animal Health Technologist
24. Animator
25. Announcer
26. Anthropologist
27. Appliance Service Technician
28. Arbitrator
29. Arborist
30. Archaeologist
31. Architect
32. Architectural Technologist
33. Archivist
34. Assessor
35. Astronomer
36. Athletic Therapist
37. Auctioneer
38. Audiologist
39. Auto Body Technician
40. Auto Detailer (*New Profile*)
41. Automated Systems Technologist
42. Automobile Accessories Installer (*New Profile*)
43. Automotive Service Technician
44. Avionics Technologist
45. Baker
46. Banking/Investment Manager
47. Banquet Manager (*New Profile - formerly part of the Banquet/Catering Manager profile*)
48. Bartender
49. Beekeeper
50. Binding and Finishing Machine Operators
51. Biochemist
52. Biological Technician
53. Biologist *(New Profile – replaces the Botanist, Marine Biologist and Wildlife Biologist profiles)*
54. Biomedical Engineering Technologist
55. Biotechnologist
56. Blaster (*New Profile*)
57. Boilermaker
58. Bricklayer
59. Broadcast Maintenance Technologist
60. Building Operator *(New Profile)*
61. Building Superintendent
62. Bus Driver

63. Bus Line Ticket Agent (*formerly Bus Line/Railway Ticket Agent*)
64. Bylaw Enforcement Officer
65. Cabinetmaker
66. Call Centre Agent
67. Canadian Forces Personnel - Commissioned Officer
68. Canadian Forces Personnel - Non Commissioned
69. Cardiology Technologist
70. Career and Technology Studies Teacher
71. Career Development Professional (*formerly Career Counsellor/Advisor*)
72. Carpenter
73. Carpet and Upholstery Cleaner
74. Cartoonist
75. Cashier
76. Casino Dealer
77. Casting Director
78. Caterer (*New Profile - formerly part of the Banquet/Catering Manager profile*)
79. Chauffeur
80. Chef
81. Chemical Engineer
82. Chemical Engineering Technologist
83. Chemical Technologist
84. Chemist
85. Child and Youth Care Worker
86. Chiropractic Assistant
87. Chiropractor
88. Choral Conductor (*formerly Choral Conductor/Director*)
89. Choreographer
90. Cinematographer
91. Civil Engineer
92. Civil Engineering Technologist
93. Coach
94. Collection Agent
95. College, Technical or Vocational Instructor
96. Combined Laboratory and X-Ray Technologist (*formerly Laboratory and X-Ray Technologist*)
97. Commercial Diver
98. Communication Technician
99. Community Health Nurse
100. Community Health Representative
101. Composer
102. Computer and Network Operator
103. Computer Engineer (*formerly Computer Hardware Engineer*)
104. Computer Programmer
105. Computer Service Technician
106. Concrete Finisher
107. Conservation Officer
108. Conservator
109. Construction Craft Labourer
110. Cook
111. Correctional Officer
112. Correctional Services Worker
113. Cosmetician
114. Costume Designer (*New Profile – formerly part of the Theatre Designer profile*)
115. Craftsperson (*New Profile*)
116. Crane and Hoisting Equipment Operator
117. Creative Writer
118. Credit/Loans Manager
119. Critic

120. Curator
121. Custodian (*formerly Janitors and Cleaners*)
122. Customer Support Analyst
123. Customs Broker
124. Customs Inspector
125. Dairy Producer
126. Dancer
127. Data Administrator
128. Database Analyst
129. Demographer
130. Dental Assistant
131. Dental Hygienist
132. Dental Technologist (*formerly Dental Laboratory Technician*)
133. Dentist
134. Denturist
135. Diagnostic Medical Sonographer
136. Dietitian
137. Digital Printing Machine Operator
138. Direct Distributor
139. Dispatcher
140. Domestic Housekeeper
141. Drafting Technician (*New Profile – formerly part of the Engineering Design and Drafting Technologist/Technician profile*)
142. Drilling and Service Rig Managers (*formerly Oil and Gas Well Drilling and Servicing Supervisors*)
143. Drilling Rig Leasehand/Floorhand (*New Profile - formerly part of the Oil and Gas Well Drilling and Service Rig Workers profile*)
144. Driving Instructor
145. Dry Cleaning and Laundry Workers
146. Early Childhood Educator
147. Ecologist
148. Economist
149. Editor
150. Educational Assistant (*formerly Teacher Assistant*)
151. Educational Counsellor
152. Electrical Contractor (*New Profile*)
153. Electrical Engineer
154. Electrical Engineering Technologist
155. Electrical Motor Systems Technician
156. Electrician
157. Electrologist
158. Electroneurophysiology (ENP) Technologist
159. Electronic Technician
160. Electronics Assemblers and Fabricators
161. Electronics Engineering Technologist
162. Elementary School Teacher
163. Elevator Constructor
164. Embalmer
165. Emergency Medical Responder
166. Emergency Medical Technician - Ambulance
167. Emergency Medical Technologist - Paramedic
168. Engineering Design and Drafting Technologist (*New Profile - formerly part of the Engineering Design and Drafting Technologist/Technician profile*)
169. English as a Second Language Teacher - Adults
170. Entomologist
171. Environmental Auditor

172. Environmental Education Specialist
173. Environmental Engineer
174. Ergonomist
175. Esthetician
176. Executive Housekeeper
177. Exhibit Designer
178. Exploration Geophysicist
179. Expressive Arts Therapists
180. Family/Marriage Counsellor
181. Farm Worker/Technician
182. Farrier
183. Fashion Designer
184. Feed Mill Production Worker
185. Field Production Operator
186. Film Director (*New Profile – formerly part of the Director – Film and Theatre profile*)
187. Financial Analyst
188. Financial Customer Service Representative (*formerly Teller*)
189. Financial Planner
190. Firefighter
191. Fish and Wildlife Officer
192. Fitness Instructor
193. Flight Attendant
194. Flight Service Specialist (*New Profile*)
195. Floorcovering Installer
196. Floral Designer
197. Food and Beverage Server
198. Food and Beverage Service Supervisor In Formal Dining Rooms
199. Food and Nutrition Manager (*formerly Food and Nutrition Management Technologist*)
200. Food Science Technologist
201. Food Scientist
202. Food Service Helper
203. Food Service Supervisor
204. Foreign Service Officer
205. Forensic Laboratory Analyst
206. Forest Technician
207. Forest Technologist
208. Forester
209. Fundraiser
210. Funeral Attendant
211. Funeral Director
212. Furniture Mover
213. Gas Pipeline Operators and Maintenance Workers
214. Gas Plant Operator
215. Gas Utility Operator
216. Gasfitter
217. Gemmologist
218. Geneticist
219. Geographer
220. Geological and Geophysical Technologist
221. Geologist
222. Geomatics/Surveying Engineer
223. Geomatics/Surveying Technologist
224. Geriatric Medicine Specialist
225. Gerontological Specialist
226. Glazier
227. Golf Professional
228. Grain and Forage Crop Producer
229. Graphic Designer
230. Greenhouse Operator (New Profile - *formerly part of the Greenhouse/Nursery Operator profile*)
231. Guest Services Attendant
232. Hairstylist
233. Hazardous Waste Management Technologist

234. Health Information Management Professional (*New Profile - formerly Health Record Technician and Health Record Administrator*)
235. Health Service Administrator
236. Hearing Aid Practitioner (*New Profile*)
237. Heavy Equipment Operator
238. Heavy Equipment Technician
239. Helicopter Pilot
240. Herbalist
241. Heritage Interpreter (*New Profile*)
242. Historian
243. Home Economist
244. Home Inspector (*New Profile*)
245. Homeopath (*New Profile*)
246. Hotel and Motel Desk Clerk
247. Human Ecologist (*New Profile*)
248. Human Resources Professional (*formerly Human Resources Officer*)
249. Hydrologist
250. Hydrometric Technician/Technologist
251. Illustrator
252. Immigration Officer
253. Industrial Designer
254. Industrial Engineer
255. Industrial Engineering Technologist
256. Information Systems Consultant
257. Information Systems Quality Assurance Analyst
258. Instrument Technician
259. Instrumental Musician (*formerly Musician*)
260. Instrumentation Engineering Technologist (*New Profile*)
261. Insulator
262. Insurance Adjuster
263. Insurance Agent/Broker
264. Insurance Underwriter
265. Interactive Media Developer
266. Interior Decorator
267. Interior Designer
268. Internal Auditor
269. Interpreter
270. Interpretive Naturalist
271. Investment Advisor
272. Investment Underwriter
273. Ironworker
274. Jeweller
275. Judge
276. Judicial Clerk
277. Kinesiologist
278. Kitchen Helper and Food Assembler (*formerly Kitchen Helper and Food Preparer/Assembler*)
279. Land Agent
280. Land Surveyor
281. Land Titles Examiner
282. Landscape Architect
283. Landscape Architectural Technologist
284. Landscape Gardener
285. Lather-Interior Systems Mechanic
286. Lawyer
287. Legal and Realtime Reporter
288. Legal Secretary
289. Letter Carrier
290. Librarian
291. Library Clerk
292. Library Technician
293. Licensed Practical Nurse
294. Licensed Practical Nurse (Advanced Orthopaedic Specialty)

295. Life Skills Coach (*New Profile*)
296. Lighting Designer (*New Profile – formerly part of the Theatre Designer profile*)
297. Lighting Technician
298. Linguist
299. Livestock/Poultry Producer
300. Locksmith
301. Logging/Forestry Equipment Operators
302. Machinist
303. Magnetic Resonance Technologist (*New Profile)*
304. Mail Sorter
305. Make-Up Artist
306. Management Consultant
307. Manufacturing Engineer
308. Mapping Technologist
309. Market Gardener
310. Market Research Analyst
311. Marketing Manager
312. Massage Therapist
313. Materials Engineering Technologist
314. Materials/Metallurgical Engineer
315. Mathematician
316. Meat Cutter
317. Mechanical Engineer
318. Mechanical Engineering Technologist
319. Mediator
320. Medical Laboratory Technologist
321. Medical Secretary
322. Medical Transcriptionist
323. Mental Health Worker
324. Messenger/Courier
325. Meteorologist
326. Microbiologist
327. Midwife
328. Millwright
329. Mining Engineer
330. Model
331. Mortgage Agent (*New Profile*)
332. Motorcycle Mechanic
333. Municipal Administrator
334. Municipal Recycling Truck Driver
335. Municipal Recycling Waste Handler
336. Museum Technician
337. Music Copyist
338. Musical Instrument Repair Technician
339. Nail Technician (*formerly Manicurist and Pedicurist*)
340. Nanny
341. Naturopathic Doctor
342. Nuclear Medicine Technologist
343. Nurse Practitioner (New Profile)
344. Nursery Operator (*New Profile – formerly part of the Greenhouse/Nursery Operator profile*)
345. Occupational Health and Safety Inspector
346. Occupational Health Nurse (*New Profile*)
347. Occupationa. Hygienist
348. Occupational Therapist
349. Occupational Therapist Assistant
350. Oceanographer
351. Office Equipment Technician
352. Oil and Gas Well Loggers and Testers
353. Oil Pipeline Operators and Maintenance Workers
354. Operations Manager
355. Operations Research Analyst
356. Ophthalmic Assistant
357. Optical Technician
358. Optician
359. Optometrist

360. Orchestra/Band Conductor
361. Orchestrator/Arranger
362. Outdoor Power Equipment Technician
363. Outdoor Sport/Recreation Guide
364. Painter and Decorator
365. Painter/Printmaker
366. Paralegal
367. Park Warden
368. Parole/Probation Officer
369. Parts Technician
370. Pathologist
371. Pediatrician
372. Personal Care Attendant
373. Personal Property/Equipment Appraiser (*New Profile*)
374. Pest Control Operator
375. Pet Groomer
376. Petroleum Engineer
377. Petroleum Engineering Technologist
378. Pharmacist
379. Pharmacologist
380. Pharmacy Assistant/Technician
381. Photographer
382. Photographic Processing Technician
383. Physical Therapy Assistant
384. Physician
385. Physicist
386. Physiologist
387. Physiotherapist
388. Plasterer
389. Plastics Processing Technician (*New Profile*)
390. Plumber
391. Podiatrist
392. Police Officer
393. Political Scientist
394. Pollution Control Technologist
395. Postal/Wicket Clerk
396. Power Engineer
397. Power Lineman
398. Power System Electrician
399. Pre-Press Technician
400. Printing Press Operator
401. Private Investigator
402. Private Trainer/Facilitator
403. Producer - Film, Radio, Television and Theatre
404. Professional Athlete
405. Property Manager
406. Prosthetic/Orthotic Technician
407. Prosthetist and Orthotist
408. Psychiatric Aide
409. Psychiatric Nurse
410. Psychiatrist
411. Psychologist
412. Public Health Inspector
413. Public Relations Representative
414. Pulpmill Operator
415. Purchasing Agent
416. Radiation Therapist
417. Radiological Technologist
418. Railway Car Mechanic
419. Real Estate Agent
420. Real Estate Appraiser
421. Receptionist
422. Recording/Sound Engineer
423. Recreation and Sport Administrator
424. Recreation Co-ordinator/Supervisor
425. Recreation Facility Operator
426. Recreation Therapist
427. Recreation Vehicle Service Technician
428. Refinery/Upgrader Process Operator
429. Reflexologist
430. Refrigeration and Air Conditioning Mechanic
431. Refuse Collector

432. Refuse Truck Driver
433. Registered Nurse
434. Rehabilitation Practitioner
435. Religious Leader
436. Reporter
437. Respiratory Therapist
438. Restaurant Manager
439. Retail Salesperson
440. Retail Shelf Stocker
441. Retail Store Manager
442. Rig Technician (*New Profile*)
443. Roofer
444. Room/Housekeeping Attendant
445. Safety Codes Officer
446. Safety Officer
447. Sales Representative (Wholesale, Nontechnical)
448. Sawfiler
449. Sawmill Machine Operator
450. School Business Official (*New Profile*)
451. Sculptor
452. Secondary School Teacher
453. Security Alarm Installer
454. Security Guard
455. Seed Cleaning/Conditioning Plant Manager
456. Seismic Observer
457. Seismic Worker
458. Service Rig Personnel (*New Profile - formerly part of the Oil and Gas Well Drilling and Service Rig Operators, and Oil and Gas Well Drilling and Service Rig Workers profiles)*
459. Set Designer (*New Profile – formerly part of the Theatre Designer profile*)
460. Sheet Metal Worker
461. Shipper and Receiver
462. Sign Language Interpreter
463. Singer
464. Social Worker
465. Sociologist
466. Software Engineer
467. Soil Scientist
468. Songwriter (*formerly Songwriter/Lyricist*)
469. Special Event Co-ordinator
470. Special Needs Teacher
471. Speech-Language Pathologist
472. Speech-Language Pathologist Assistant
473. Sport Medicine Physician
474. Sports Instructor
475. Sports Official
476. Sprinkler Systems Installer
477. Stage Manager
478. Station Attendant/Ramp Service Agent
479. Statistician
480. Steamfitter-Pipefitter
481. Steel Detailer
482. Sterile Processing Technician (*New Profile*)
483. Structural Steel and Plate Fitter
484. Surface Mining Equipment Operator
485. Swine Technician (*New Profile*)
486. Systems Auditor
487. Systems Security Analyst
488. Systems Tester
489. Taxi Driver
490. Technical Sales Representative
491. Technical Writer
492. Telecommunications Engineering Technologist (*New Profile*)
493. Telemarketer
494. Telephone Operator
495. Television Audio/Video Operator

496. Television Camera Operator
497. Theatre Director (*New Profile – formerly part of the Director – Film and Theatre profile)*
498. Tilesetter
499. Tool and Die Maker
500. Tour Guide
501. Toxicologist
502. Traffic Co-ordinator (*formerly Traffic Coordinator/Assistant*)
503. Traffic Manager
504. Translator
505. Transport Refrigeration Technician
506. Travel Consultant
507. Travel Guide
508. Truck Driver
509. Turfgrass Management Specialist
510. Underground Miner
511. Unit Clerk (*formerly Unit/Ward Clerk*)
512. University Professor
513. Upholsterer
514. Urban, Regional and Park Planners
515. Utility Clerk
516. Vending Machine Repairer
517. Vending Machine Route Worker (*New Profile*)
518. Veterinarian
519. Visual Merchandiser
520. Volunteer Manager
521. Warehousing Professionals
522. Watch Repairer
523. Water and Wastewater Treatment Plant Operator (*New Profile - combination of the Water Treatment Plant Operator and Wastewater Treatment Plant Operator profiles*)
524. Water Well Driller
525. Web Designer
526. Web Technician
527. Webmaster
528. Welder
529. Well Service Equipment Operator (*New Profile – includes former Well Service Pump Equipment Operator*)
530. Wildland Firefighter (*New Profile*)
531. Wireline Field Supervisor
532. Word Processing Operator

B. New Occupational Profiles

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1. Advertising Account Executive
2. Agrologist
3. Auto Detailer
4. *Automobile Accessories* Installer
5. Banquet Manager
6. Biologist
7. Blaster
8. Building Operator
9. Caterer
10. Costume Designer
11. Craftsperson
12. Drafting Technician
13. Drilling Rig Leasehand/Floorhand
14. Electrical Contractor
15. Engineering Design and Drafting Technologist
16. Film Director
17. Flight Service Specialist
18. Greenhouse Operator
19. Health Information Management Professional
20. Hearing Aide Practitioner
21. Heritage Interpreter
22. Home Inspector
23. Homeopath
24. Human Ecologist
25. Instrumentation Engineering Technologist
26. Life Skills Coach
27. *Lighting Designer*
28. Magnetic Resonance Technologist
29. Mortgage Agent
30. Nurse Practitioner
31. Nursery Operator
32. Occupational Health Nurse
33. Personal Property/Equipment Appraiser
34. Plastics Processing Technician
35. Rig Technician
36. School Business Official
37. Service Rig Personnel
38. Set Designer
39. Sterile Processing Technician
40. Swine Technician
41. Telecommunications Engineering Technologist
42. Theatre Director
43. Vending Machine Route Worker
44. Water and Wastewater Treatment Plant Operator
45. Well Service Equipment Operator
46. Wildland Firefighter

C. Discontinued Occupational Profiles
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1. Agricultural Specialist (*part of new Agrologist profile*)
2. Banquet/Catering Manager (*split into two new profiles*)
3. Botanist (*part of new Biologist profile*)
4. Director – Theatre and Film (*split into two new profiles*)
5. Electronics Engineer (*now part of Electrical Engineer*)
6. Greenhouse/Nursery Operator (*split into two new profiles*)
7. Marine Biologist (*part of new Biologist profile*)
8. Oil and Gas Well Drillers and Service Rig Operators (*oil and gas profiles reorganized to accommodate new designated occupations*)
9. Oil and Gas Well Drilling and Service Rig Workers (*replaced by new profiles*)
10. Service Station Attendant
11. Shoe Repairer
12. Social Sciences Research Assistant
13. Tailors and Dressmakers
14. Taxidermist
15. Theatre Designer (*split into three new profiles*)
16. Wellness Consultant (*too much overlap with new Occupational Health Nurse profile*)
17. Wildlife Biologist (*part of new Biologist profile*)
18. Water Treatment Plant Operator (*part of new Water and Wastewater Treatment Plant Operator profile*)
19. Wastewater Treatment Plant Operator (*part of new Water and Wastewater Treatment Plant Operator profile*)

D. Occupational Profiles by Industry

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This section lists the occupational profiles by industry. An explanation of how the occupational profiles in each industry have been organized is included. The industries are:

1. Accommodation and Food Services Industry
2. Agriculture Industry
3. Computer-Related Occupational Profiles
4. Construction Industry
5. Educational Services Industry
6. Environment-Related Occupational Profiles
7. Finance, Insurance and Real Estate Industry
8. Food and Beverage Products Manufacturing Industry
9. Forestry and Logging Industry
10. Health Care and Social Assistance Industry
11. Information, Culture and Recreation Industry
12. Management, Administrative and Other Support Services Industry
13. Metals, Metal Fabrication and Machinery Manufacturing Industry
14. Mineral Products Manufacturing Industry
15. Mining Industry
16. Oil and Gas Extraction Industry
17. Other Manufacturing Industry
18. Petrochemicals, Rubber, Plastics and Chemicals Manufacturing Industry

D. Occupational Profiles by Industry
February 14, 2006

19. Professional and Technical Services Industry
20. Public Administration Industry
21. Repair, Maintenance, Personal and Other Services Industry
22. Retail Trade Industry
23. Transportation and Warehousing Industry
24. Utilities Industry
25. Wholesale Trade Industry

Occupational Profiles By Industry

Accommodation and Food Services Industry

Many occupational profiles describe work in the accommodation and food services industry. Following are three lists:

1. profiles about occupations involved in providing short-term lodging or food for immediate consumption
2. profiles about occupations related to accommodation and food services
3. indirectly related profiles about other types of work required in organizations that provide accommodation or food services.

Providing Lodging and/or Food

Accommodation Manager

Accommodation managers direct and control the operations of privately and publicly owned hotels, motels, campgrounds, trailer parks, camps, hostels and post-secondary institution residences.

Baker

Bakers prepare and bake breads, cakes, cookies, pastries, pies and other baked goods.

Banquet Manager

Banquet managers plan, organize and direct the service of food and beverages for banquets and other social functions.

Bartender

Bartenders mix and serve drinks and control the beverages leaving the bar in cocktail lounges, restaurants and other establishments where liquor is served.

Cashier

Cashiers total bills, accept payments, make change, provide information, fill out forms and provide receipts for goods and services in supermarkets, department stores, theatres, restaurants and other establishments.

Caterer

Caterers plan, organize and direct the preparation and service of food and beverages for banquets and other social functions.

Chef

Chefs are managers who plan, direct and participate in food preparation and cooking activities in restaurants, hotels, institutions and other food establishments.

Cook

Cooks prepare food in public and private eating establishments including hotels, restaurants, institutions, trains and ships.

Executive Housekeeper

Executive housekeepers manage the housekeeping and laundry departments in hotels, motels and institutions such as hospitals and schools.

Food and Beverage Server

Food and beverage servers accept and serve customers' food and beverage orders in restaurants and bars.

Food and Beverage Service Supervisor In Formal Dining Rooms

Food and beverage service supervisors co-ordinate and supervise food and beverage service in formal restaurants and dining rooms.

Food Service Helper

Food service helpers clear tables and assist workers who serve food and beverages in restaurants and other food service establishments.

Food Service Supervisor

Food service supervisors are responsible for the day to day management of food services in health care facilities, cafeterias, catering and hospitality establishments.

Guest Services Attendant

Guest services attendants provide personal services for hotel guests.

Hotel and Motel Desk Clerk

Desk clerks are employed in hotels and motels, and are often the first people to greet incoming guests.

Kitchen Helper and Food Assembler

Kitchen helpers and food preparers and assemblers assist cooks in restaurants and institutions by keeping the kitchens clean and by performing a variety of food preparation tasks.

Restaurant Manager

Restaurant managers plan, organize, direct and control the operation of establishments in which food and beverages are served.

Room/Housekeeping Attendant

Room/housekeeping attendants keep hotels, motels, clubs and dormitory rooms and associated lobbies, halls and banquet rooms neat, clean and well stocked.

Other Profiles Related to Accommodation and Food Services

Building Superintendent

Building superintendents maintain and manage commercial, institutional and residential properties.

Carpet and Upholstery Cleaner

Carpet and upholstery cleaners operate cleaning machines to clean carpets, rugs and upholstered furniture at customers' premises or in cleaning plants.

College, Technical or Vocational Instructor

College, technical and vocational instructors provide instruction to adults in a wide variety of subject areas including vocational, technical, business or services training, trades, academic upgrading and university transfer courses.

Custodian

Custodians clean building interiors, furnishings and equipment.

Dietitian

Dietitians develop, implement and evaluate food and nutrition strategies to promote health and treat disease; manage food service systems; and develop and deliver related programs and policies.

Dry Cleaning and Laundry Workers

Dry cleaning workers clean clothes, drapes and other items using dry and wet cleaning techniques. Laundry workers clean clothes and linens that can be washed in water.

Flight Attendant

Flight attendants are responsible for the on-board safety of airline passengers and crew members.

They assist passengers and other crew members in emergency situations and offer a variety of services to passengers to make a trip as pleasant as possible.

Food and Nutrition Manager

Food and nutrition managers provide nutrition care and supervise food service operations in health care settings and commercial food service establishments.

Outdoor Sport/Recreation Guide

Outdoor sport and recreation guides organize and conduct outdoor activities such as mountain expeditions, rafting trips, hunting trips, fishing trips and trail rides.

Special Event Co-ordinator

Special event co-ordinators plan, organize and co-ordinate conferences, meetings, seminars, exhibitions, trade shows, festivals and other special events.

Tour Guide

Tour guides escort individuals or groups of people on tours and describe points of interest.

Travel Guide

Travel guides escort individuals or groups of people on holiday tours.

University Professor

University professors are employed by degree-granting institutions to teach and produce works of art or conduct research and publish their research findings.

Vending Machine Route Worker

Vending machine route workers fill, clean and maintain vending machines that dispense change or products in places such as offices, schools and hotels.

Indirectly Related Profiles

People in the following occupations may work for accommodation and food services establishments.

Accountant

Accounting Technician

Administrative Assistant

Arborist

Building Operator

Bus Driver

Call Centre Agent

Collection Agent

Computer Service Technician

Customer Support Analyst

Elevator Constructor

Human Resources Professional

Information Systems Consultant

Internal Auditor

Interpreter

Landscape Architectural Technologist

Landscape Gardener

Lawyer
Management Consultant
Marketing Manager
Power Engineer
Private Investigator
Private Trainer/Facilitator
Public Relations Representative
Purchasing Agent
Receptionist
Safety Officer
Sales Representative (Wholesale, Nontechnical)
Security Guard
Turfgrass Management Specialist
Webmaster

Agriculture Industry

Many occupational profiles describe work that involves growing crops, raising animals or providing agriculture-related support services. Following are three lists:

1. profiles of work involved in growing crops and raising animals
2. profiles about occupations related to agriculture
3. indirectly related profiles about other types of work required in agriculture-related businesses, institutions and agencies.

Growing Crops and Raising Animals

Animal Care Attendant

Animal care attendants feed, clean and generally care for animals in animal shelters, stables, kennels, pet shops, aquariums, zoos and wildlife parks.

Beekeeper

Beekeepers manage and keep colonies of honey bees in apiaries (bee-yards) to produce honey and hive by-products (e.g. pollen, bees wax), pollinate crops, or produce queens and bees.

Dairy Producer

Dairy producers operate dairy farms to produce bulk milk which goes to secondary processing to become table milk, cheese, ice cream, yogurt and other dairy products.

Farm Worker/Technician

Farm workers/technicians plant, cultivate and harvest crops, raise livestock and poultry, operate and maintain farm equipment, and maintain and repair farm buildings.

Grain and Forage Crop Producer

Grain and forage crop producers are farmers who grow grains such as wheat, barley, canola, oats, rye, flax seed, peas and speciality crops or forage crops.

Greenhouse Operator

Greenhouse operators plan, organize and direct the activities of greenhouse staff who propagate, grow and market flowers and other plants or produce.

Livestock/Poultry Producer

Livestock/poultry producers own, manage and direct farm operations that raise cattle, swine, sheep, poultry and alternative livestock.

Market Gardener

Market gardeners grow fresh produce (vegetables, berries, herbs and spices) and flowers for sale directly to consumers at farmers' markets and through farm gate sales or u-pick operations.

Nursery Operator

Nursery operators plan, organize and direct the activities of nursery staff who propagate, grow and market trees, shrubs and perennial plants.

Swine Technician

Swine technicians may be involved in all aspects of hog production or specialize in a particular area such as breeding or caring for pigs at a particular stage of growth.

Profiles Related to Agriculture

Agricultural Commodity Inspector

Agricultural commodity inspectors ensure that agricultural products meet the production, storage and transportation standards set by federal and provincial agriculture departments.

Agricultural Engineer

Agricultural engineers integrate engineering science and design with applied biological science to solve problems in agriculture, food and other resource industries.

Agricultural Equipment Technician

Agricultural equipment technicians repair, overhaul and maintain agricultural equipment such as tractors, tillage, seeding and harvesting equipment.

Agricultural Products Processing Machine Operator

Agricultural products processing machine operators run machines that process and package food and beverage products.

Agrologist

Agrologists provide advice and conduct research related to agricultural and environmental science and technology. They apply scientific principles to the production, improvement, use, processing and marketing of plants and animals, and the management of related resources.

Animal Health Technologist

Animal health technologists provide primary support to veterinarians by caring for animals, and assisting in the diagnosis and treatment of companion and livestock animal health disorders.

Arborist

Arborists, sometimes called tree care specialists or tree service technicians, maintain healthy trees and treat or remove injured and diseased trees.

Biological Technician

Biological technicians perform routine analysis and technical duties in the field, in the laboratory or both. They provide technical support and services for scientists and engineers working in fields such as agriculture, environmental science, resource management, plant and animal biology, microbiology, cell and molecular biology and health sciences.

Farrier

Farriers trim horses' hooves and, when necessary, forge metal bars into custom-made horseshoes or shape commercial shoes to fit and suit a particular horse.

Feed Mill Production Worker

Feed mill production workers operate machines that clean, separate, crush, grind, mix, pellet and bag grains for animal and poultry feed.

Food Science Technologist

Food science technologists work independently or provide technical support in laboratory analysis, food product development, processing, quality assurance or regulatory positions.

Food Scientist

Food scientists investigate the chemical, microbiological, physical and sensory nature of food, and apply their knowledge in the development, processing, preserving, packaging, distributing and storing of foodstuffs.

Pet Groomer

Pet groomers shampoo, clip and groom dogs, cats and other pets to improve and maintain their hygiene, comfort and appearance.

Seed Cleaning/Conditioning Plant Manager

Seed cleaning/conditioning plant managers operate plants that remove weed seed, foreign material and other contaminants from seed, and may upgrade seed to improve the quality of the product.

Soil Scientist

Soil scientists study the composition, distribution, development and behaviour of soils and the interaction of soils with soil organisms, animals and plants.

Turfgrass Management Specialist

Turfgrass management specialists maintain and manage grass and related areas and facilities, and assist in the design and construction of landscape projects.

Veterinarian

Veterinarians diagnose animal illnesses, treat diseased and injured animals, perform surgery, provide preventive medical services and provide advice regarding the care and breeding of animals.

Indirectly Related Profiles

People in the following occupations may work for agriculture-related businesses, institutions or agencies.

Accountant

Accounting Technician

Administrative Assistant

Arbitrator

Assessor

Biochemist

Biotechnologist

Chemical Technologist

Chemist

College, Technical or Vocational Instructor

Computer Service Technician

Cook

Ecologist

Economist

Engineering Design and Drafting Technologist

Entomologist

Environmental Engineer

Industrial Designer

Landscape Gardener

Lawyer

Librarian

Library Technician

Management Consultant

Marketing Manager

Mechanical Engineer

Microbiologist

Parts Technician

Pest Control Operator

Purchasing Agent
Sales Representative (Wholesale, Nontechnical)
Shipper and Receiver
Software Engineer
Technical Sales Representative
Technical Writer
Truck Driver
University Professor
Warehousing Professionals

Computer-Related Occupational Profiles

Many occupational profiles describe work related to designing, installing and servicing computer systems and other types of digital equipment. Following are four lists:

1. profiles about occupations directly related to designing, installing and maintaining computer systems
2. profiles about occupations that involve assembling, installing or servicing other types of digital equipment
3. profiles about occupations involved in teaching others how to design, install and maintain computer technology
4. indirectly related profiles about occupations in which people may work in the computer industry.

Designing, Installing and Maintaining Computer Systems

Automated Systems Technologist

Automated systems technologists analyze, implement, maintain and design electro-mechanical (automated) systems. These systems often include mechanical components, sensors, actuators and control systems and may include stationary or mobile robots.

Computer and Network Operator

Computer and network operators establish, operate, maintain and support the use of local area networks (LANs), wide area networks (WANs), mainframe networks and related hardware, software and peripheral equipment.

Computer Engineer

Computer engineers design, implement, evaluate, modify, maintain and test computer systems and related equipment.

Computer Programmer

Computer programmers create, modify and test the forms, scripts and code that tell computers what to do.

Computer Service Technician

Computer service technicians install, service and configure computer systems and networks including desktop computers, servers and peripherals such as printers, disk drives and CD-ROM drives.

Customer Support Analyst

Customer support analysts answer computer-related questions, investigate complaints and work with others in a team environment to resolve users' software and hardware problems.

Data Administrator

Data administrators develop and implement data administration policy, standards and models.

Database Analyst

Database analysts design, develop, modify and maintain database management systems to meet specific user needs.

Electronics Engineering Technologist

Electronics engineering technologists apply the practical and theoretical principles of electronics to the development of electronic-based circuits, and the operation and servicing of electronic equipment and systems.

Information Systems Consultant

Information systems consultants analyze, design and develop information systems business solutions and provide advice on a wide range of information systems issues.

Information Systems Quality Assurance Analyst

Information systems quality assurance analysts develop and implement policies and procedures to ensure customer satisfaction, maximum performance and overall quality of software products and information systems.

Interactive Media Developer

Interactive media developers write, modify, integrate and test computer code for internet applications, computer-based training software, computer games, film, video and other interactive media.

Software Engineer

Software engineers research, design, evaluate, modify, integrate, test and maintain software applications, technical environments, operating systems, embedded software, information warehouses and telecommunications software.

Systems Auditor

Systems auditors conduct independent third-party reviews to assess the quality of software products, applications and information systems including hardware, networks and facilities.

Systems Security Analyst

Systems security analysts are computer specialists who assess administrative, physical and technical security risks to data, software and hardware, and develop policies, procedures and contingency plants to prevent or minimize the effects of security breaches and concerns.

Systems Tester

Systems testers execute test plans to evaluate the performance of computer software, information systems and telecommunication systems.

Web Designer

Web designers create websites for the Internet and sites internal to their organizations.

Web Technician

Web technicians set up and maintain Internet and intranet websites and web server hardware and software, and monitor and optimize network connectivity and performance.

Webmaster

Webmasters are responsible for the design, development, maintenance and success of World Wide Web sites on the Internet and sites internal to their organizations.

Assembling, Installing and Servicing Digital Equipment

Biomedical Engineering Technologist

Biomedical engineering technologists maintain and repair the biomedical equipment that physicians, nurses and other medical personnel use to monitor, diagnose and treat medical conditions.

Broadcast Maintenance Technologist

Broadcast maintenance technologists install, test, inspect, modify, repair and maintain radio and television broadcasting systems.

Communication Technician

Communication technicians install, repair and maintain telecommunication systems.

Electrical Engineer

Electrical engineers design, construct, analyze and test electrical and electronic components

and systems, and are responsible for their safe operation.

Electrical Engineering Technologist

Electrical engineering technologists apply their knowledge and understanding of electrical theory in business and industry settings.

Electronic Technician

Electronic technicians service and repair household and business electronic equipment such as radios and televisions, compact disc players and personal computer systems.

Electronics Assemblers and Fabricators

Electronics assemblers and fabricators mount, secure, interconnect and adjust parts and components to assemble and fabricate electronic equipment.

Instrument Technician

Instrument technicians install, maintain and repair the measuring and control instruments used in industrial and commercial processing.

Office Equipment Technician

Office equipment technicians repair and maintain business machines such as photocopiers, facsimile (fax) machines and laser printers.

Security Alarm Installer

Security alarm installers install and maintain electronic security alarm systems for homes, businesses and industrial properties.

Vending Machine Repairer

Vending machine repairers install, service and repair coin-operated vending machines that dispense food, beverages and other products.

Teaching

Career and Technology Studies Teacher

Career and technology studies (CTS) teachers help junior and senior high school students make effective career decisions, develop skills for personal living, and enter the workforce or further education.

College, Technical or Vocational Instructor

College, technical and vocational instructors provide instruction to adults in a wide variety of subject areas including vocational, technical, business or services training, trades, academic upgrading and university transfer courses.

Private Trainer/Facilitator

Private trainers and facilitators conduct workshops, seminars, retreats, conference sessions and individual coaching sessions for young people and adults. They also may develop, design and evaluate training programs, curricula and materials.

University Professor

University professors are employed by degree-granting institutions to teach and produce works of art or conduct research and publish their research findings.

Indirectly Related Profiles

People in the following occupations may work for organizations involved in developing, installing or servicing digital equipment.

Accountant

Accounting Technician

Administrative Assistant
Creative Writer
Electrician
Graphic Designer
Lawyer
Librarian
Library Technician
Linguist
Management Consultant
Market Research Analyst
Purchasing Agent
Receptionist
Shipper and Receiver
Technical Sales Representative
Technical Writer
Warehousing Professionals

Construction Industry

Many occupational profiles describe work involved in constructing, repairing and renovating residential, commercial and industrial buildings, or engineering works such as dams, refineries, roads, bridges, sewers and transmission lines. Following are three lists:

1. profiles about constructing or repairing buildings or engineering works
2. profiles about other occupations related to construction
3. indirectly related profiles about other types of work required in the construction industry.

Constructing, Repairing and Renovating

Blaster

Blasters break up rock and demolish structures by placing and detonating explosives.

Bricklayer

Bricklayers construct and repair structures such as walls, partitions, patios, arches, fireplaces and chimneys by preparing and laying brick and other masonary units.

Carpenter

Carpenters construct, erect and repair buildings and other structures made of wood, wood substitutes, steel and other materials.

Civil Engineer

Civil engineers plan, design and supervise the construction, maintenance and decommissioning of a wide variety of public and private structures and facilities.

Civil Engineering Technologist

Civil engineering technologists work with engineers, architects, surveyors and contractors in designing, developing and building civil engineering projects that are economical and functional and satisfy applicable standards and building codes.

Communication Technician

Communication technicians install, repair and maintain telecommunication systems.

Concrete Finisher

Concrete finishers place and finish concrete floors, driveways, sidewalks, curbs, bridge decks and other concrete structures.

Construction Craft Labourer

Construction craft labourers prepare and clean up construction sites, move materials and equipment and perform demolition, excavation and compaction activities.

Crane and Hoisting Equipment Operator

Crane and hoisting equipment operators service and operate the hoist and swing equipment used to move machinery, materials and other large objects.

Electrician

Electricians install, alter, repair and maintain electrical systems designed to provide heat, light, power, control, signals or fire alarms for all types of buildings, structures and premises.

Elevator Constructor

Elevator constructors install, modify, service and repair electric and hydraulic elevators, personnel and man-hoists, moving walkways, stagelifts, escalators and related equipment.

Floorcovering Installer

Floorcovering installers install, repair and replace resilient floorcovering materials such as underlay, carpet, sheet goods (e.g. vinyl) and resilient tile in commercial, residential and industrial buildings.

Gasfitter

Gasfitters size, install, test, adjust and service natural gas and propane equipment ranging from residential furnaces to industrial boilers.

Glazier

Glaziers cut and install glass and aluminum systems for commercial, residential and automotive applications.

Heavy Equipment Operator

Heavy equipment operators use a variety of mobile machines and attachments to excavate, grade and landscape earth or move workers, materials and equipment.

Insulator

Insulators apply, remove and repair thermal and acoustical insulation (e.g. calcium silicate, glass foam, mineral wool, styrofoam, fibreglass) on all types of industrial equipment (e.g. duct piping, heat exchangers, tanks, vessels).

Ironworker

Ironworkers fabricate, construct and join scaffolding, structural steel buildings, bridges, ornamental ironwork and pre-cast structures.

Lather-Interior Systems Mechanic

Lather-interior systems mechanics assemble and install the frameworks for gypsum materials in buildings.

Painter and Decorator

Painters and decorators apply paint, wall coverings and other finishes to interior and exterior surfaces of buildings and other structures.

Plasterer

Plasterers select, mix and apply gypsum, cement and acrylic mixtures to exterior and interior walls and ceilings to produce plain or decorative surfaces that are fire, weather or sound resistant.

Plumber

Plumbers plan, install and service plumbing systems, fixtures, piping equipment and controls.

Power Lineman

Power linemen construct, maintain and repair overhead and underground electrical power transmission and distribution systems.

Refrigeration and Air Conditioning Mechanic

Refrigeration and air conditioning mechanics install, maintain, repair and overhaul industrial, commercial and residential refrigeration and air conditioning systems and their component parts.

Roofer

Roofers prepare and apply protective coverings to flat and sloped roof surfaces.

Safety Officer

Safety officers, often called safety co-ordinators, advisers, directors or managers, facilitate the development, implementation and maintenance of workplace safety programs.

Sheet Metal Worker

Sheet metal workers design, fabricate, assemble, install and repair sheet metal products.

Sprinkler Systems Installer

Sprinkler systems installers fabricate, install, test, maintain, inspect and repair sprinkler systems in industrial operations, department stores, office buildings, hotels, schools, hospitals and residences.

Steamfitter-Pipefitter

Steamfitter-pipefitters lay out, assemble, fabricate, maintain and repair piping systems which carry water, steam, chemicals or fuel used in heating, cooling, lubricating and other processes.

Structural Steel and Plate Fitter

Structural steel and plate fitters lay out, prepare and assemble structural steel and steel vessels, containers and miscellaneous components.

Tilesetter

Tilesetters cover, repair and decorate exterior and interior walls, floors and other surfaces using ceramic, mosaics, marble and quarry tile, slate, stone, terrazzo or granite.

Welder

Welders join and sever metal components and make metal parts, tools, machines and equipment.

Other Profiles Related to Construction

Architect

Architects design building projects and advise clients regarding building projects. They prepare programs, sketches and cost estimates, produce scale construction drawings, write specifications and review on-site construction work.

Architectural Technologist

Architectural technologists work with architects, engineers and others in designing and developing plans and working drawings, estimating costs and supervising building construction projects.

Boilermaker

Boilermakers build, erect, repair, test and maintain all types of boilers, tanks and pressure vessels, and perform all types of structural and plate work on dust, air, gas, steam, oil, water and other liquid-tight pressure containers.

Cabinetmaker

Cabinetmakers build and repair custom or production-type fixtures and furniture made of wood or wood substitutes.

Commercial Diver

Commercial divers work in underwater construction and salvage operations inland (in rivers, lakes, canals and open roadsteads) or offshore (in harbours and oceans). They may participate in search and recovery operations or marine research, or do inspection, maintenance and repair work related to offshore oil and gas production.

Drafting Technician

Drafting technicians prepare engineering and architectural drawings, plans, diagrams and layouts. They may work independently as part of multidisciplinary teams or support the work of technologists, engineers, architects and other professionals.

Electrical Contractor

Electrical contractors erect or install electrical installations or equipment. They may also repair, service or maintain electrical installations or equipment.

Engineering Design and Drafting Technologist

Engineering design and drafting technologists develop engineering designs and drawings from

preliminary concepts and specifications, and prepare technical reports, construction specifications, cost/materials estimates and contract/tender documents.

Gas Utility Operator

Gas utility operators install and service gas utility pipeline systems that transport natural gas from its source to points of use such as building meter sets.

Heavy Equipment Technician

Heavy equipment technicians maintain, repair and overhaul towed and self-propelled heavy vehicles and industrial heavy equipment and commercial transport devices connected to or moved by a power unit.

Home Inspector

Home inspectors visually examine buildings and write reports about the condition of major components such as the roof, structure, exterior, insulation, plumbing, electrical systems, heating and other systems and components.

Interior Designer

Interior designers create and enhance interior spaces to improve quality of life, increase productivity and protect public health, safety and welfare.

Land Surveyor

Land surveyors plan, direct and conduct legal surveys to determine and interpret the location of boundaries, contours and other natural or human-made features.

Landscape Architect

Landscape architects combine artistic and creative perspectives with scientific and engineering knowledge to create, manage and conserve environments that are both functional and attractive. Their goal is to create harmony between natural environments, land features and architectural structures.

Landscape Architectural Technologist

Landscape architectural technologists assist landscape architects, architects, and other professional designers and planners in designing and developing outside and inside environments. Projects may range from assisting in planning public parks to developing inner courtyard spaces in shopping malls.

Landscape Gardener

Landscape gardeners work with other trades to carry out landscaping operations and design in a variety of environments. These environments include residential, commercial and public grounds, playgrounds, golf courses, garden centres, tree nurseries, greenhouses and interior landscapes.

Locksmith

Locksmiths install, adjust and repair locks, make keys and change lock combinations. They work on residential, automotive, commercial and institutional locksets and door hardware. Locksmiths may also install and maintain more sophisticated security systems.

Mechanical Engineering Technologist

Mechanical engineering technologists may work independently or with mechanical engineers in designing, drawing, developing and modifying various types of products, machines, mechanical systems and manufacturing processes.

Power System Electrician

Power system electricians install, maintain and repair electrical power generation, transmission and distribution systems and equipment.

Safety Codes Officer

Safety codes officers inspect the construction, installation and maintenance of structures and systems to ensure compliance with relevant codes, standards and regulations. They are concerned with the elements of public safety covered under the Safety Codes Act.

Security Alarm Installer

Security alarm installers install and maintain electronic security alarm systems for homes, businesses and industrial properties.

Water Well Driller

Water well drillers set up and operate mobile rotary, boring or cable tool drilling rigs used to drill residential, commercial and industrial water wells. They also conduct environmental assessment drilling.

Indirectly Related Profiles

People in the following occupations may work for companies in the construction industry.

Accountant

Accounting Technician

Administrative Assistant

Arbitrator

Arborist

Archaeologist

Assessor

Auto Body Technician

Carpet and Upholstery Cleaner

Chef

College, Technical or Vocational Instructor

Computer and Network Operator

Computer Engineer

Computer Programmer

Computer Service Technician

Cook

Custodian

Customer Support Analyst

Dispatcher

Economist

Electrical Engineer

Electrical Engineering Technologist

Electrical Motor Systems Technician

Electronics Engineering Technologist

Environmental Engineer

Ergonomist

Food Service Supervisor

Geomatics/Surveying Engineer
Geomatics/Surveying Technologist
Helicopter Pilot
Human Resources Professional
Industrial Designer
Industrial Engineer
Industrial Engineering Technologist
Information Systems Consultant
Instrument Technician
Interior Decorator
Internal Auditor
Kitchen Helper and Food Assembler
Lawyer
Librarian
Library Technician
Machinist
Management Consultant
Manufacturing Engineer
Materials Engineering Technologist
Materials/Metallurgical Engineer
Mechanical Engineer
Mechanical Engineering Technologist
Millwright
Occupational Health Nurse
Occupational Hygienist
Operations Manager
Paralegal
Parts Technician
Pollution Control Technologist
Property Manager
Public Relations Representative
Purchasing Agent
Real Estate Agent
Real Estate Appraiser
Receptionist
Sales Representative (Wholesale, Nontechnical)
Security Guard
Seismic Worker
Shipper and Receiver

Software Engineer
Technical Sales Representative
Technical Writer
Truck Driver
Turfgrass Management Specialist
Urban, Regional and Park Planners
Warehousing Professionals

Educational Services Industry

A number of occupational profiles describe work that involves providing instruction and/or training. Following are three lists:

1. profiles about teaching occupations
2. profiles about other occupations involving instruction or training
3. indirectly related profiles about other types of work required in the educational services industry.

Teaching

Career and Technology Studies Teacher

Career and technology studies (CTS) teachers help junior and senior high school students make effective career decisions, develop skills for personal living, and enter the workforce or further education.

College, Technical or Vocational Instructor

College, technical and vocational instructors provide instruction to adults in a wide variety of subject areas including vocational, technical, business or services training, trades, academic upgrading and university transfer courses.

Driving Instructor

Driving instructors teach the knowledge and skills required to safely operate vehicles such as cars, motorcycles, transport trucks and buses.

Educational Assistant

Educational assistants help teachers with many time-consuming instructional and non-instructional tasks.

Educational Counsellor

Educational counsellors advise students on educational, personal and career-related issues and co-ordinate counselling services for students, parents and teachers.

Elementary School Teacher

Elementary school teachers teach and facilitate the learning of children ranging in age from four to 12 years in Kindergarten to Grade 6.

English as a Second Language Teacher - Adults

English as a second language (ESL) teachers provide English language and lifeskills instruction to immigrants, international students and others whose first language is not English.

Environmental Education Specialist

Environmental education specialists help create an awareness of the relationship between human activities and the natural environment. They develop and promote strategies that encourage others to make responsible choices regarding consumer decisions, government policies and corporate responsibilities.

Private Trainer/Facilitator

Private trainers and facilitators conduct workshops, seminars, retreats, conference sessions and individual coaching sessions for young people and adults. They also may develop, design and evaluate training programs, curricula and materials.

Secondary School Teacher

Secondary school teachers may be generalists or subject area specialists who provide instruction to young people in junior and senior high school (Grades 7 to 12).

Special Needs Teacher

Special needs teachers work primarily with children who require special instructional services to help them learn and develop to their potential.

Sports Instructor

Sports instructors teach the basics of a particular sport (e.g. skiing, swimming, baseball) to beginners and recreational athletes, or help experienced athletes further develop their skills.

University Professor

University professors are employed by degree-granting institutions to teach and produce works of art or conduct research and publish their research findings.

Other Profiles Related to Instruction and Training

People in the following occupations do some instructing and/or training.

Addictions Counsellor

Addictions counsellors help individuals, families and communities identify and deal with addictions through treatment and prevention programs.

Audiologist

Audiologists work with children and adults to prevent, assess, diagnose and provide treatment and counselling for hearing and balance disorders.

Career Development Professional

Career development professionals advise, coach, provide information and support people who are planning, seeking and managing their life/work direction.

Child and Youth Care Worker

Child and youth care workers work to improve the physical, emotional, intellectual and social development of vulnerable children and adolescents.

Coach

Coaches recruit, train and instruct athletes to produce the best sports performances possible. Their job titles generally reflect the sport in which they specialize (e.g. hockey coach, baseball coach, swim coach, figure skating coach) or their position relative to others in an organization (e.g. head coach, club coach).

Correctional Services Worker

Correctional services workers supervise adult and young offenders and administer a wide variety of correctional programs and services.

Dental Hygienist

Dental hygienists assess, diagnose and treat oral health conditions through the provision of therapeutic, educational and and preventative dental hygiene procedures and strategies to promote wellness.

Early Childhood Educator

Early childhood educators work with infants, toddlers, preschool and school-aged children in a variety of settings.

Expressive Arts Therapists

Expressive arts therapists use artistic media to help clients maintain and improve their physical and mental health by recognizing and developing often-untapped inner resources.

Fitness Instructor

Fitness instructors promote exercise as a healthy lifestyle choice and teach students, privately or in

groups, strengthening, endurance, aerobic, flexibility or weight training exercises.

Interpretive Naturalist

Interpretive naturalists explain the natural and scientific features of parks, botanical gardens and wilderness areas to visitors.

Librarian

Librarians assess the informational, educational, cultural and recreational needs of the community they serve, find resources to meet those needs, and provide access to and manage resources.

Library Technician

Library technicians support and assist librarians by performing technical tasks involved in library work such as collection management, cataloguing and document delivery. They also provide reference services and may manage small corporate, school or public libraries.

Mental Health Worker

Mental health workers help people deal with personal and social problems by teaching related skills and providing information and support.

Occupational Therapist

Occupational therapists help people whose capabilities have been impaired by physical or mental illness or injury, emotional or developmental problems, or the aging process to improve their ability to function in everyday life. They assist people in caring for themselves, returning to work and resuming community activities.

Recreation Co-ordinator/Supervisor

Recreation co-ordinators administer and oversee recreation programs and leisure services.

Safety Officer

Safety officers, often called safety co-ordinators, advisers, directors or managers, facilitate the development, implementation and maintenance of workplace safety programs.

School Business Official

School business officials provide financial and business services to publicly funded school boards.

Social Worker

Social workers help individuals, families, groups, communities and organizations develop the skills and resources they need to enhance their social functioning and social environments.

Speech-Language Pathologist

Speech-language pathologists work with children and adults to prevent, assess, diagnose and provide treatment and counselling for speech, language, voice and swallowing disorders.

Indirectly Related Profiles

People in the following occupations may work in educational settings (e.g. schools, colleges, universities, technical institutes, private vocational schools).

Accountant

Accounting Technician

Administrative Assistant

Anthropologist

Archaeologist

Archivist

Astronomer

Athletic Therapist
Biochemist
Biological Technician
Biologist
Biotechnologist
Building Operator
Bus Driver
Carpenter
Cashier
Chef
Chemical Technologist
Chemist
Choral Conductor
Computer and Network Operator
Computer Engineer
Computer Programmer
Computer Service Technician
Conservator
Custodian
Customer Support Analyst
Dancer
Ecologist
Electrician
Entomologist
Food Scientist
Food Service Supervisor
Fundraiser
Geneticist
Geographer
Gerontological Specialist
Historian
Human Resources Professional
Illustrator
Instrumental Musician
Internal Auditor
Kitchen Helper and Food Assembler
Landscape Gardener
Lawyer
Linguist

Microbiologist
Office Equipment Technician
Orchestra/Band Conductor
Painter/Printmaker
Parole/Probation Officer
Pharmacologist
Physicist
Physiologist
Political Scientist
Power Engineer
Psychologist
Public Relations Representative
Purchasing Agent
Recreation and Sport Administrator
Recreation Facility Operator
Sales Representative (Wholesale, Nontechnical)
Sculptor
Security Guard
Shipper and Receiver
Sign Language Interpreter
Singer
Sociologist
Software Engineer
Special Event Co-ordinator
Statistician
Technical Sales Representative
Technical Writer
Toxicologist
Volunteer Manager
Warehousing Professionals
Web Designer
Webmaster
Word Processing Operator

Environment-Related Occupational Profiles

Many occupational profiles decribe occupations in which people may be involved in protecting the environment. Following are three lists:

1. profiles about occupations directly involved in monitoring or assessing the environmental impact of industrial processes or projects, or educating people about environment-related issues
2. profiles about occupations in which people may do environment-related work
3. indirectly related profiles about occupations in which people may work for organizations in the environment industry.

Monitoring, Assessing and Educating

Ecologist

Ecologists study the relationships of living things to one another and to their environment, and examine the effects of a wide range of factors such as population size, rainfall, temperature, forest fires and major construction projects.

Environmental Auditor

Environmental auditors assess the environmental performance of operations in business and industry.

Environmental Education Specialist

Environmental education specialists help create an awareness of the relationship between human activities and the natural environment. They develop and promote strategies that encourage others to make responsible choices regarding consumer decisions, government policies and corporate responsibilities.

Environmental Engineer

Environmental engineers design systems, processes and equipment for air, water and soil pollution assessment, prevention and control, solid and hazardous waste management, and the remediation of contaminated sites.

Hazardous Waste Management Technologist

Hazardous waste management technologists provide information and advice on the packaging, handling and disposal of toxic wastes; conduct inspections and waste audits; investigate environmental incidents; and monitor and control the clean-up of contaminated land, water and air.

Pollution Control Technologist

Pollution control technologists conduct inspections, tests and field investigations to determine the extent of existing air, water or soil contamination and find ways to control and prevent contamination.

Other Environment-Related Profiles

Agricultural Engineer

Agricultural engineers integrate engineering science and design with applied biological science to solve problems in agriculture, food and other resource industries.

Biochemist

Biochemists study the chemical make-up of living matter and the molecular basis for processes that occur in cells. They develop medical, agricultural, food science, pharmacological, industrial, environmental and other practical applications.

Biological Technician

Biological technicians perform routine analysis and technical duties in the field, in the laboratory or

both. They provide technical support and services for scientists and engineers working in fields such as agriculture, environmental science, resource management, plant and animal biology, microbiology, cell and molecular biology and health sciences.

Biologist

Biologists conduct research to learn more about living organisms and ecosystems, manage natural resources, and develop new practices and products in such diverse fields as environmental conservation, forensics and pest control.

Biotechnologist

Biotechnologists apply their knowledge of biochemistry, microbiology and molecular genetics to improve industrial processes and develop new processes in the agricultural, chemical and health care product industries (for example, in the production of drugs, antibiotics or vaccines).

Chemical Engineer

Chemical engineers develop processes, design equipment and provide technical and management services for plants that convert raw materials into a wide range of end products (e.g. chemicals, pharmaceuticals, food products, fuels, plastics, metals).

Chemical Engineering Technologist

Chemical engineering technologists are involved in process design, plant engineering, environmental control, engineering sales and plant operations. They may work independently or in an engineering team.

Chemical Technologist

Chemical technologists may work independently or with a team of chemists, chemical engineers and related professionals involved in quality control testing, product research and development, or environmental analysis.

Chemist

Chemists conduct research and develop new or improved products and processes, and test and evaluate their quality and safety.

Civil Engineer

Civil engineers plan, design and supervise the construction, maintenance and decommissioning of a wide variety of public and private structures and facilities.

Civil Engineering Technologist

Civil engineering technologists work with engineers, architects, surveyors and contractors in designing, developing and building civil engineering projects that are economical and functional and satisfy applicable standards and building codes.

Conservation Officer

Conservation officers manage resources, visitor services, maintenance and recreation in provincial parks and educate the public about related issues.

Entomologist

Entomologists study the classification, life cycle and habits of insects and related life forms, and plan and implement insect surveys and pest management programs.

Food Science Technologist

Food science technologists work independently or provide technical support in laboratory analysis, food product development, processing, quality assurance or regulatory positions.

Food Scientist

Food scientists investigate the chemical, microbiological, physical and sensory nature of food, and

apply their knowledge in the development, processing, preserving, packaging, distributing and storing of foodstuffs.

Forest Technician

Forest technicians perform technical functions related to forest management, silviculture, harvesting, and conservation and protection.

Forest Technologist

Forest technologists perform many of the technical functions involved in the scientific management of forested areas.

Forester

Foresters plan, administer and direct programs related to managing forested lands and related renewable resources.

Geneticist

Geneticists conduct research into the biochemical and physiological aspects of heredity, particularly the role of deoxyribonucleic acid (DNA), and carry out cytogenetic or molecular tests to aid in diagnosing disease.

Geographer

Geographers study the interactions between the distinctive, dynamic features and characteristics of the biosphere and of the human organization of activity within it. They may specialize in particular phenomena or regions at various scales of analysis.

Geological and Geophysical Technologist

Geological and geophysical technologists may work independently or with a team of geologists, geophysicists, mining engineers or petroleum engineers.

Geologist

Geologists study the nature and history of the Earth's crust and apply their knowledge in exploring for minerals and hydrocarbons (e.g. oil and gas), developing resources for production, building engineering foundations and stable slopes, finding and evaluating ground water supplies and conducting environmental investigations.

Geomatics/Surveying Engineer

Geomatics/surveying engineers gather, model, analyze and manage spatially-referenced data (information identified according to location).

Geomatics/Surveying Technologist

Geomatics technologists conduct or participate in field surveys, office calculations and plan production to determine the exact locations and relative positions of natural features and man-made structures on the earth's surface, underground or underwater.

Hydrologist

Hydrologists study the distribution and circulation of water in the atmosphere, on the earth's surface and in soil and underlying rocks.

Hydrometric Technician/Technologist

Hydrometric technicians and technologists may work independently or provide technical support for hydrologists and related scientists and engineers.

Interpretive Naturalist

Interpretive naturalists explain the natural and scientific features of parks, botanical gardens and wilderness areas to visitors.

Meteorologist

Meteorologists study the physics, chemistry and dynamics of the atmosphere and its interaction with land and water surfaces, weather, climate, climate change and their effect on people's health and safety, the economy and the earth's ecosystems.

Microbiologist

Microbiologists study the growth and characteristics of micro-organisms (viruses, bacteria, fungi, parasites) and their interactions with their environment, and develop medical and industrial applications (for example, in the food processing industry).

Municipal Recycling Truck Driver

Municipal recycling truck drivers collect, sort and transport recyclable waste materials such as glass, plastic, metal and paper.

Municipal Recycling Waste Handler

Municipal recycling waste handlers sort recyclable domestic and commercial waste materials such as glass, plastic, metal and paper.

Oceanographer

Oceanographers study all aspects of oceans including their boundaries, contents and role in the earth's climate system.

Park Warden

Park wardens are responsible for natural and cultural resource management, public safety and law enforcement in Canada's national parks.

Pathologist

Pathologists are physicians who diagnose diseases such as cancer and provide key laboratory diagnostic services. Some pathologists also play a key role in forensic investigations.

Pharmacologist

Pharmacologists are biomedical scientists who investigate the mechanisms underlying the effects of drugs and chemicals on living systems. They use this knowledge to help design and evaluate chemical agents for the prevention and treatment of disease.

Physicist

Physicists investigate why our physical environment behaves as it does and solve technological problems.

Physiologist

Physiologists are scientists who study the whole organism and cellular functioning in humans, animals and plants.

Public Health Inspector

Public health inspectors prevent disease and promote health by educating people about public health issues and enforcing health legislation.

Soil Scientist

Soil scientists study the composition, distribution, development and behaviour of soils and the interaction of soils with soil organisms, animals and plants.

Toxicologist

Toxicologists investigate the possible harmful effects on living things of chemical agents (e.g. drugs, pesticides, food additives), physical agents (e.g. ionizing and electro-magnetic radiation) and biological agents (e.g. plant and animal toxins).

Urban, Regional and Park Planners

Urban, regional and park planners study the social, economic, political and physical conditions of urban and rural communities, and develop plans for the overall management and protection of specific land parcels or regions.

Water and Wastewater Treatment Plant Operator

Water and wastewater treatment plant operators monitor and operate control systems and equipment in water purification and treatment plants, and wastewater, sewage treatment and liquid waste plants.

Indirectly Related Profiles

People in the following occupations may work for organizations in the environment industry (e.g. agencies and government departments involved in environmental research, education, regulation, monitoring or impact assessment; or companies that provide environment-related services or products).

Accountant

Accounting Technician

Administrative Assistant

Agricultural Commodity Inspector

Animal Health Technologist

Arbitrator

Arborist

Archaeologist

Architect

Architectural Technologist

Biotechnologist

Bylaw Enforcement Officer

Call Centre Agent

Cashier

College, Technical or Vocational Instructor

Commercial Diver

Computer and Network Operator

Computer Engineer

Computer Programmer

Computer Service Technician

Custodian

Customer Support Analyst

Economist

Editor

Electronics Engineering Technologist

Ergonomist

Exhibit Designer

Exploration Geophysicist

Food Scientist

Fundraiser
Geneticist
Greenhouse Operator
Helicopter Pilot
Historian
Human Resources Professional
Illustrator
Industrial Designer
Information Systems Consultant
Internal Auditor
Land Agent
Land Surveyor
Landscape Architect
Landscape Architectural Technologist
Lawyer
Librarian
Library Technician
Management Consultant
Marketing Manager
Mechanical Engineer
Mediator
Nursery Operator
Occupational Health and Safety Inspector
Occupational Hygienist
Operations Manager
Outdoor Sport/Recreation Guide
Paralegal
Pharmacologist
Photographer
Physician
Physiologist
Political Scientist
Private Trainer/Facilitator
Producer - Film, Radio, Television and Theatre
Public Relations Representative
Purchasing Agent
Receptionist
Registered Nurse
Reporter

Retail Salesperson
Retail Store Manager
Safety Officer
Sales Representative (Wholesale, Nontechnical)
Security Guard
Shipper and Receiver
Software Engineer
Technical Sales Representative
Technical Writer
Telemarketer
Tour Guide
Turfgrass Management Specialist
University Professor
Veterinarian
Volunteer Manager
Warehousing Professionals
Webmaster
Word Processing Operator

Finance, Insurance and Real Estate Industry

Many occupational profiles describe work in financial, insurance and real estate companies. Following are four lists:

1. profiles about occupations involved in making or facilitating financial transactions
2. profiles about occupations involved in providing insurance services
3. profiles about occupations involved in appraising, managing, renting and selling real estate
4. indirectly related profiles about other types of work done in organizations that provide financial, insurance and real estate services.

Financial Transactions

Accountant

Accountants provide financial reporting and consulting services for organizations and individuals.

Accounting Technician

Accounting technicians maintain systematic records of business transactions and verify and record those transactions. They use computers to calculate, prepare and process invoices, accounts payable and receivable, budget documents and other routine financial records.

Banking/Investment Manager

Banking and investment managers plan and direct the activities of departments or branches in financial establishments such as banks, credit unions, trust companies, mortgage firms and mutual fund investment companies.

Credit/Loans Manager

Credit managers gather and analyze financial information about loan applications and business conditions, and approve or reject credit applications. They work in credit-granting organizations such as oil companies, banks, credit unions, retail stores, hotels and finance companies.

Financial Analyst

Financial analysts collect, evaluate and apply financial, economic and statistical data to analyze and evaluate investment opportunities, or make financial decisions and recommendations.

Financial Customer Service Representative

Financial customer service representatives promote their financial institution's products and services, open and close accounts, keep records of transactions, accept payments, and receive and pay out money.

Financial Planner

Financial planners develop personal financial plans for individuals and families. They analyze clients' net worth, financial resources, lifestyle preferences and goals, and make recommendations regarding how clients can achieve their financial goals.

Internal Auditor

Internal auditors conduct financial, systems and operational audits in their organizations. (External auditors are usually accountants who are not part of the organization being audited.)

Investment Advisor

Investment advisors assist clients by providing investment advice and recommending the purchase or sale of securities. Taking into account a client's income, assets, age, tax burden and financial expectations, investment advisors help the client identify financial goals and recommend investments to assist in achieving those goals.

Investment Underwriter

Investment underwriters help governments and corporations raise capital by providing financial

advice and underwriting or distributing new securities.

Mortgage Agent

Mortgage agents help clients locate funding for mortgage financing and find the best rates, and provide advice regarding the best approaches to take with lenders.

Insurance Services

Actuary

Actuaries apply their knowledge of mathematics (particularly probability, statistics and risk theory) to financial problems involving future uncertainty. These uncertainties may be associated with life or property/casualty insurance, annuities, pension or other employee benefit plans.

Insurance Adjuster

Insurance adjusters investigate insurance claims, make recommendations regarding the payment of benefits from insurance policies, and negotiate payments and settlements.

Insurance Agent/Broker

Insurance agents and brokers assess people's financial needs and advise them on how to protect themselves against financial loss. They may sell life, property, casualty, automobile or health insurance policies to individuals, businesses or public institutions.

Insurance Underwriter

Insurance underwriters evaluate the risks involved in applications for insurance and, on behalf of the insurance company, decide whether or not to accept those risks. They may work for life insurance companies or general insurance companies.

Real Estate Services

Assessor

Assessors determine the value of land, buildings, businesses, structures and certain types of equipment for property tax purposes.

Building Operator

Building operators are responsible for the day-to-day maintenance and operation of large buildings that have complex heating, mechanical and electrical systems.

Building Superintendent

Building superintendents maintain and manage commercial, institutional and residential properties.

Property Manager

Property managers oversee the administration, maintenance, operation and improvement of residential, commercial and industrial properties and represent the interests of property owners.

Real Estate Agent

Real estate agents sell, lease and rent houses, apartments, commercial buildings, land and other real estate for clients on a commission basis.

Real Estate Appraiser

Real estate appraisers estimate the value of vacant and improved residential, commercial, industrial, agricultural and other real estate.

Indirectly Related Profiles

People in the following occupations may work for financial, insurance or real estate companies.

Administrative Assistant

Arbitrator

Building Operator
Call Centre Agent
Collection Agent
Computer and Network Operator
Computer Engineer
Computer Programmer
Custodian
Customer Support Analyst
Demographer
Economist
Health Information Management Professional
Human Resources Professional
Information Systems Consultant
Information Systems Quality Assurance Analyst
Interpreter
Lawyer
Legal and Realtime Reporter
Legal Secretary
Librarian
Library Technician
Management Consultant
Mathematician
Mediator
Medical Transcriptionist
Messenger/Courier
Operations Research Analyst
Paralegal
Private Investigator
Private Trainer/Facilitator
Public Relations Representative
Receptionist
Security Guard
Sign Language Interpreter
Software Engineer
Statistician
Systems Auditor
Systems Security Analyst
Technical Sales Representative
Translator

Travel Consultant
Web Designer
Web Technician
Webmaster
Word Processing Operator

Food and Beverage Products Manufacturing Industry

A number of occupational profiles describe work in the food and beverage products manufacturing industry. Following are three lists:

1. profiles about occupations involved in manufacturing food and beverage products for human or animal consumption
2. profiles about other occupations related to manufacturing food and beverage products
3. indirectly related profiles about other types of work performed in this industry.

Manufacturing Food and Beverage Products

Agricultural Products Processing Machine Operator

Agricultural products processing machine operators run machines that process and package food and beverage products.

Baker

Bakers prepare and bake breads, cakes, cookies, pastries, pies and other baked goods.

Feed Mill Production Worker

Feed mill production workers operate machines that clean, separate, crush, grind, mix, pellet and bag grains for animal and poultry feed.

Food and Nutrition Manager

Food and nutrition managers provide nutrition care and supervise food service operations in health care settings and commercial food service establishments.

Food Science Technologist

Food science technologists work independently or provide technical support in laboratory analysis, food product development, processing, quality assurance or regulatory positions.

Food Scientist

Food scientists investigate the chemical, microbiological, physical and sensory nature of food, and apply their knowledge in the development, processing, preserving, packaging, distributing and storing of foodstuffs.

Meat Cutter

Meat cutters prepare standard cuts of meat, poultry and fish, and products such as sausage in processing plants or retail food establishments.

Related Profiles

Automated Systems Technologist

Automated systems technologists analyze, implement, maintain and design electro-mechanical (automated) systems. These systems often include mechanical components, sensors, actuators and control systems and may include stationary or mobile robots.

Chemical Technologist

Chemical technologists may work independently or with a team of chemists, chemical engineers and related professionals involved in quality control testing, product research and development, or environmental analysis.

Customs Broker

Customs brokers are employed by importers and exporters to clear goods through customs and ensure their timely delivery. They may also be involved in logistics or supply chain management.

Dietitian

Dietitians develop, implement and evaluate food and nutrition strategies to promote health and treat disease; manage food service systems; and develop and deliver related programs and policies.

Home Economist

Home economists enhance people's quality of life by providing advisory, counselling, management, promotion and education services related to money management, consumer education, foods and nutrition, home design, clothing and textiles, and family function.

Industrial Designer

Industrial designers conceptualize and produce designs for a wide variety of products and systems (e.g. furniture, electronics, appliances, tools, automobiles, sporting goods, architectural details, signage).

Industrial Engineer

Industrial engineers determine the most effective ways for an organization to use its basic resources: people, machines, materials, money and time.

Industrial Engineering Technologist

Industrial engineering technologists gather and analyze information about how people, machines and materials are used in organizations to ensure that products and services are delivered in the most cost effective and timely manner possible.

Instrument Technician

Instrument technicians install, maintain and repair the measuring and control instruments used in industrial and commercial processing.

Manufacturing Engineer

Manufacturing engineers design, implement, direct and co-ordinate manufacturing system materials and processes to achieve the most efficient, cost effective and high quality production possible in a safe and environmentally responsible manner.

Mechanical Engineer

Mechanical engineers research, design and evaluate machines, devices, equipment, systems and processes, and plan and oversee their development, installation, operation and maintenance.

Mechanical Engineering Technologist

Mechanical engineering technologists may work independently or with mechanical engineers in designing, drawing, developing and modifying various types of products, machines, mechanical systems and manufacturing processes.

Millwright

Millwrights install, maintain, repair and troubleshoot stationary industrial machinery and mechanical equipment in factories, production plants and recreational facilities.

Operations Manager

Operations managers direct and co-ordinate the operation of manufacturing, service delivery and production departments in industrial, commercial and government organizations.

Operations Research Analyst

Operations research analysts use mathematical modelling and information technology to develop decision support systems for decision-makers in public and private organizations.

Power Engineer

Power engineers supervise, operate and maintain machinery and boilers that provide power, heat, refrigeration and other utility services to heavy industry and large building complexes.

Safety Officer

Safety officers facilitate the development, implementation and maintenance of workplace safety programs.

Sales Representative (Wholesale, Nontechnical)

Wholesale, nontechnical sales representatives sell their organizations' nontechnical goods and services to retail, commercial, industrial and professional clients.

Traffic Manager

Traffic managers direct and co-ordinate the transportation of incoming materials from suppliers or raw material sources and outgoing products to distribution houses and customers.

Warehousing Professionals

Warehousing professionals are responsible for general warehousing activities such as shipping and receiving and planning and managing the flow of goods into, within and from organizations.

Indirectly Related Profiles

People in the following occupations may be employed by food and beverage manufacturers.

Accountant

Accounting Technician

Administrative Assistant

Computer and Network Operator

Computer Programmer

Cook

Custodian

Human Resources Professional

Lawyer

Management Consultant

Marketing Manager

Purchasing Agent

Receptionist

Security Guard

Shipper and Receiver

Truck Driver

Forestry and Logging Industry

A number of occupational profiles describe work in the forestry and logging industry. Following are three lists:

1. profiles about occupations directly involved in forestry and logging operations
2. profiles about other occupations related to forestry and logging
3. indirectly related profiles about other types of work required in the forestry and logging industry.

Forestry and Logging Operations

Forest Technician

Forest technicians perform technical functions related to forest management, silviculture, harvesting, and conservation and protection.

Forest Technologist

Forest technologists perform many of the technical functions involved in the scientific management of forested areas.

Forester

Foresters plan, administer and direct programs related to managing forested lands and related renewable resources.

Logging/Forestry Equipment Operators

Logging/forestry equipment operators use machinery and equipment to fell, process and load trees at logging sites.

Profiles of Related Occupations

Arborist

Arborists, sometimes called tree care specialists or tree service technicians, maintain healthy trees and treat or remove injured and diseased trees.

Biological Technician

Biological technicians perform routine analysis and technical duties in the field, in the laboratory or both. They provide technical support and services for scientists and engineers working in fields such as agriculture, environmental science, resource management, plant and animal biology, microbiology, cell and molecular biology and health sciences.

College, Technical or Vocational Instructor

College, technical and vocational instructors provide instruction to adults in a wide variety of subject areas including vocational, technical, business or services training, trades, academic upgrading and university transfer courses.

Conservation Officer

Conservation officers manage resources, visitor services, maintenance and recreation in provincial parks and educate the public about related issues.

Environmental Auditor

Environmental auditors assess the environmental performance of operations in business and industry.

Environmental Engineer

Environmental engineers design systems, processes and equipment for air, water and soil pollution assessment, prevention and control, solid and hazardous waste management, and the remediation of contaminated sites.

Heavy Equipment Operator

Heavy equipment operators use a variety of mobile machines and attachments to excavate, grade and landscape earth or move workers, materials and equipment.

Land Surveyor

Land surveyors plan, direct and conduct legal surveys to determine and interpret the location of boundaries, contours and other natural or human-made features.

Landscape Architect

Landscape architects combine artistic and creative perspectives with scientific and engineering knowledge to create, manage and conserve environments that are both functional and attractive. Their goal is to create harmony between natural environments, land features and architectural structures.

Landscape Architectural Technologist

Landscape architectural technologists assist landscape architects, architects, and other professional designers and planners in designing and developing outside and inside environments. Projects may range from assisting in planning public parks to developing inner courtyard spaces in shopping malls.

Landscape Gardener

Landscape gardeners work with other trades to carry out landscaping operations and design in a variety of environments. These environments include residential, commercial and public grounds, playgrounds, golf courses, garden centres, tree nurseries, greenhouses and interior landscapes.

Park Warden

Park wardens are responsible for natural and cultural resource management, public safety and law enforcement in Canada's national parks.

Turfgrass Management Specialist

Turfgrass management specialists maintain and manage grass and related areas and facilities, and assist in the design and construction of landscape projects.

University Professor

University professors are employed by degree-granting institutions to teach and produce works of art or conduct research and publish their research findings.

Urban, Regional and Park Planners

Urban, regional and park planners study the social, economic, political and physical conditions of urban and rural communities, and develop plans for the overall management and protection of specific land parcels or regions.

Indirectly Related Profiles

People in the following occupations may work in the forestry and logging industry.

Accountant

Accounting Technician

Administrative Assistant

Arbitrator

Computer and Network Operator

Computer Programmer

Computer Service Technician

Cook

Custodian
Customer Support Analyst
Dispatcher
Ecologist
Economist
Geomatics/Surveying Engineer
Geomatics/Surveying Technologist
Heavy Equipment Technician
Human Resources Professional
Industrial Engineer
Industrial Engineering Technologist
Information Systems Consultant
Internal Auditor
Lawyer
Legal Secretary
Management Consultant
Marketing Manager
Occupational Hygienist
Operations Manager
Public Relations Representative
Purchasing Agent
Receptionist
Safety Officer
Security Guard
Shipper and Receiver
Technical Sales Representative
Technical Writer
Truck Driver
Warehousing Professionals
Web Designer
Webmaster
Word Processing Operator

Health Care and Social Assistance Industry

Many occupational profiles describe work in the health care and social assistance industry. Following are four lists:

1. profiles about occupations involved in diagnosis, treatment and other aspects of health care
2. profiles about occupations involved in providing social assistance services
3. profiles about other occupations related to health care and social assistance
4. indirectly related profiles about other types of work performed in the health care and social assistance industry.

Diagnosis and Treatment

Acupuncturist

Acupuncturists diagnose patients' diseases, physiological disorders and injuries according to traditional Chinese medical theories, and treat them by inserting acupuncture needles or by using other methods of stimulating different points on the body.

Addictions Counsellor

Addictions counsellors help individuals, families and communities identify and deal with addictions through treatment and prevention programs.

Athletic Therapist

Athletic therapists work with other health care professionals to advise athletes and coaches on the prevention and treatment of sports injuries, or treat members of the public who have musculoskeletal injuries.

Audiologist

Audiologists work with children and adults to prevent, assess, diagnose and provide treatment and counselling for hearing and balance disorders.

Cardiology Technologist

Cardiology technologists perform and interpret cardiology tests to provide information needed in the diagnosis and treatment of heart disease.

Chiropractic Assistant

Chiropractic assistants perform a variety of support tasks to assist chiropractors with patient care.

Chiropractor

Chiropractors are health professionals concerned with the diagnosis, treatment and prevention of mechanical disorders of the musculoskeletal system and the effects of these disorders on the function of the nervous system and general health. They emphasize manual treatments including spinal manipulation and adjustment.

Combined Laboratory and X-Ray Technologist

Combined laboratory and x-ray technologists conduct routine medical laboratory tests, perform radiography and electrocardiograms and set up, clean and maintain related equipment.

Community Health Nurse

Community health nurses provide professional nursing services for individuals, families, communities and groups in a variety of settings.

Dental Assistant

Dental assistants work with health care professionals and related agencies in any or all of the following capacities: chairside assistant, intra-oral assistant, administrative assistant, community

health assistant, dental education and research assistant.

Dental Hygienist

Dental hygienists assess, diagnose and treat oral health conditions through the provision of therapeutic, educational and and preventative dental hygiene procedures and strategies to promote wellness.

Dentist

Dentists, also called doctors of dental surgery (D.D.S.) or doctors of medical dentistry (D.M.D.), diagnose, treat, prevent and control dental and orofacial disease.

Diagnostic Medical Sonographer

Diagnostic medical sonographers operate ultrasound equipment to produce and record images of body organs and masses including the fetus.

Dietitian

Dietitians develop, implement and evaluate food and nutrition strategies to promote health and treat disease; manage food service systems; and develop and deliver related programs and policies.

Electroneurophysiology (ENP) Technologist

Electroneurophysiology (ENP) technologists use sensitive electronic equipment to record and evaluate the electrical activity of patients' central and peripheral nervous systems to assist physicians in diagnosing diseases, injuries and abnormalities.

Emergency Medical Responder

Emergency medical responders (EMRs) provide pre-hospital emergency medical care and transportation for the sick and injured.

Emergency Medical Technician - Ambulance

Emergency medical technicians - ambulance (EMT-As) provide pre-hospital emergency medical care at the basic life support level as well as transportation for the sick and injured.

Emergency Medical Technologist - Paramedic

Emergency medical technologist - paramedics (EMT-Ps) provide pre-hospital emergency medical care at the advanced life support level as well as transportation for the sick and injured.

Expressive Arts Therapists

Expressive arts therapists use artistic media to help clients maintain and improve their physical and mental health by recognizing and developing often-untapped inner resources.

Geriatric Medicine Specialist

Geriatric specialists, sometimes called geriatricians, are physicians who specialize in preventing, diagnosing and treating diseases and disorders of the elderly and who act primarily as consultants for other medical doctors.

Gerontological Specialist

Gerontological specialists are professionals who specialize in working with older adults.

Herbalist

Herbalists advise people about the use of herbs and dietary supplements to maintain good health and relieve symptoms related to conditions such as arthritis, rheumatism, asthma, skin disorders or stomach ailments.

Homeopath

Homeopaths promote wellness by suggesting lifestyle changes and treat ailments by administering small doses of natural substances that cause similar symptoms.

Licensed Practical Nurse

Licensed practical nurses provide care for individuals, families and groups in a variety of health care settings. They may practice independently or as part of a health care team.

Licensed Practical Nurse (Advanced Orthopaedic Specialty)

Licensed practical nurses (LPNs) in the advanced orthopaedic specialty apply, adjust and remove a variety of casts, commercial splints/braces, bandages and traction. They work as part of health care teams in emergency departments, cast rooms, orthopaedic surgical wards and medical clinics.

Magnetic Resonance Technologist

Magnetic resonance technologists operate medical diagnostic equipment that uses magnetic fields and radio waves to produce images of the body.

Massage Therapist

Massage therapists assess the soft tissue and joints of the body and administer massage treatments to relieve pain and symptoms of stress, or to develop, maintain, rehabilitate or augment physical function.

Medical Laboratory Technologist

Medical laboratory technologists perform a variety of laboratory tests and procedures to assist physicians in diagnosing, monitoring, treating and preventing disease.

Mental Health Worker

Mental health workers help people deal with personal and social problems by teaching related skills and providing information and support.

Midwife

Midwives are primary health care profesionals who provide continuity of care for women and babies throughout pregnancy, birth and six weeks after birth.

Naturopathic Doctor

Naturopathic doctors, sometimes called naturopaths, naturopathic practitioners or naturopathic physicians, use natural, non-toxic healing therapies to treat patients' diseases and disorders.

Nuclear Medicine Technologist

Nuclear medicine technologists operate specialized equipment that maps the distribution of radioactive tracers and tagged compounds to assist in the diagnosis and treatment of disease.

Nurse Practitioner

Nurse practitioners are registered nurses who have advanced training in health assessment, health promotion and illness prevention. They diagnose and treat health problems, order and interpret tests, and prescribe drugs.

Occupational Health Nurse

Occupational health nurses are registered nurses who are employed by businesses to promote employee health, prevent disease and injury, provide first aid and nursing care when required, and facilitate the rehabilitation of sick or injured employees.

Occupational Therapist

Occupational therapists help people whose capabilities have been impaired by physical or mental illness or injury, emotional or developmental problems, or the aging process to improve their ability to function in everyday life. They assist people in caring for themselves, returning to work and resuming community activities.

Occupational Therapist Assistant

Occupational therapist assistants, sometimes called rehabilitation/therapy aides or attendants, assist

occupational therapists in the implementation of treatment programs designed to develop, improve or maintain clients' abilities to function independently.

Optometrist

Optometrists examine patients' eyes, diagnose diseases and disorders of the eye and associated structures, prescribe and dispense eyeglasses and contact lenses, prescribe therapeutic drugs and recommend appropriate treatments.

Pathologist

Pathologists are physicians who diagnose diseases such as cancer and provide key laboratory diagnostic services. Some pathologists also play a key role in forensic investigations.

Pediatrician

Pediatricians are specialist physicians who provide medical care for children from birth through adolescence.

Personal Care Attendant

Personal care attendants provide personal assistance and support services for elderly, disabled, acute or chronically ill people who require short term assistance or ongoing support.

Pharmacist

Pharmacists provide services and programs that are designed to promote health and well-being, and treat disease and other disorders through drug therapy, wellness promotion and disease state management.

Pharmacy Assistant/Technician

Pharmacy assistants and technicians assist pharmacists by compounding, packaging and labelling pharmaceutical products, and maintaining prescription records and inventories of medications and pharmaceutical products.

Physical Therapy Assistant

Physical therapy assistants assist physiotherapists in the implementation of treatment programs designed to improve or maintain clients' abilities to function independently.

Physician

Physicians, sometimes called medical doctors, are licensed to diagnose and treat patients' diseases, physiological and psychiatric disorders, injuries and other health-related problems.

Physiotherapist

Physiotherapists work with patients to plan and carry out individually designed physical treatment programs to restore function and prevent disability from disease, trauma or injury.

Podiatrist

Podiatrists diagnose and treat diseases, deformities and injuries of the human foot and help patients prevent foot-related disorders.

Psychiatric Aide

Psychiatric aides work under the direct supervision of health care professionals caring for people who are mentally ill, developmentally handicapped, cognitively impaired or brain injured.

Psychiatric Nurse

Psychiatric nurses provide professional nursing and mental health nursing services in mental health care facilities and in the community. They promote and help people restore and maintain good mental health.

Psychiatrist

Psychiatrists are physicians (medical doctors) who specialize in the diagnosis and treatment of mental illness and emotional disorders, and act as consultants for other physicians.

Psychologist

Psychologists assess, diagnose and treat psychological, emotional and behavioural disorders. They also research and apply theories relating to behaviour and mental processes.

Radiation Therapist

Radiation therapists administer prescribed treatments for cancer patients that involve using ionizing radiation (e.g. x-rays, gamma rays or electrons).

Radiological Technologist

Radiological technologists operate x-ray equipment to produce images that are used to diagnose diseases and injuries.

Recreation Therapist

Recreation therapists encourage and promote independent leisure lifestyles for people who have special needs.

Reflexologist

Reflexologists apply varying degrees of finger pressure or laser light to specific spots on clients' feet, hands, ears, face, scalp or other parts of the body to improve health and well-being.

Registered Nurse

Registered nurses provide professional nursing services for individuals, families, groups and communities, deliver health-education programs and provide consultative nursing services to promote, maintain and restore patient health.

Rehabilitation Practitioner

Rehabilitation practitioners help children and adults who have disabilities to become more independent and live active lives as participating members of the community. They usually work as part of a team to assess, design and implement intervention and teaching activities which address individuals' residential, educational, social, employment and recreational needs.

Respiratory Therapist

Respiratory therapists assist physicians in diagnosing, treating, educating and promoting wellness in patients who have respiratory and associated disorders.

Speech-Language Pathologist

Speech-language pathologists work with children and adults to prevent, assess, diagnose and provide treatment and counselling for speech, language, voice and swallowing disorders.

Sport Medicine Physician

Sports physicians are medical doctors who specialize in the prevention, recognition, diagnosis and treatment of injuries and diseases related to sports activities.

Social Assistance Services

Child and Youth Care Worker

Child and youth care workers work to improve the physical, emotional, intellectual and social development of vulnerable children and adolescents.

Community Health Representative

Community health representatives promote wellness, the protection of health and the prevention of injury and illness in community settings.

Early Childhood Educator

Early childhood educators work with infants, toddlers, preschool and school-aged children in a variety of settings.

Recreation Co-ordinator/Supervisor

Recreation co-ordinators administer and oversee recreation programs and leisure services.

Social Worker

Social workers help individuals, families, groups, communities and organizations develop the skills and resources they need to enhance their social functioning and social environments.

Volunteer Manager

Volunteer managers plan volunteer involvement in organizations and co-ordinate volunteer programs in a variety of settings.

Related Profiles

Biologist

Biologists conduct research to learn more about living organisms and ecosystems, manage natural resources, and develop new practices and products in such diverse fields as environmental conservation, forensics and pest control.

Biomedical Engineering Technologist

Biomedical engineering technologists maintain and repair the biomedical equipment that physicians, nurses and other medical personnel use to monitor, diagnose and treat medical conditions.

Biotechnologist

Biotechnologists apply their knowledge of biochemistry, microbiology and molecular genetics to improve industrial processes and develop new processes in the agricultural, chemical and health care product industries (for example, in the production of drugs, antibiotics or vaccines).

Career Development Professional

Career development professionals advise, coach, provide information and support people who are planning, seeking and managing their life/work direction.

College, Technical or Vocational Instructor

College, technical and vocational instructors provide instruction to adults in a wide variety of subject areas including vocational, technical, business or services training, trades, academic upgrading and university transfer courses.

Correctional Services Worker

Correctional services workers supervise adult and young offenders and administer a wide variety of correctional programs and services.

Dental Technologist

Dental technologists fabricate, duplicate, alter and repair prosthetic and orthodontic dental devices.

Denturist

Denturists are dental health professionals who specialize in the field of removable oral prosthesis (dentures). In partnership with other health care professionals, they assess, design, fabricate, repair and insert complete and removable partial dentures and diagnose related problems.

Educational Counsellor

Educational counsellors advise students on educational, personal and career-related issues and co-ordinate counselling services for students, parents and teachers.

Executive Housekeeper

Executive housekeepers manage the housekeeping and laundry departments in hotels, motels and institutions such as hospitals and schools.

Family/Marriage Counsellor

Family/marriage counsellors provide counselling to help families, couples and individuals resolve interpersonal difficulties, develop effective and satisfactory relationships, and build meaningful support systems.

Food and Nutrition Manager

Food and nutrition managers provide nutrition care and supervise food service operations in health care settings and commercial food service establishments.

Fundraiser

Fund-raisers, sometimes called development officers, plan and organize annual fund-raising programs, special gift appeals and campaigns to raise money for particular groups or causes (e.g. community agencies, arts organizations, educational institutions, hospitals and other non-profit organizations).

Geneticist

Geneticists conduct research into the biochemical and physiological aspects of heredity, particularly the role of deoxyribonucleic acid (DNA), and carry out cytogenetic or molecular tests to aid in diagnosing disease.

Health Information Management Professional

Health information management professionals manage the collection, recording and transmission of health information. They translate information from paper documents to electronic records or integrate information into databases, interpret data, and ensure security and access to health information guidelines are followed.

Health Service Administrator

Health service administrators plan, organize, direct, co-ordinate and evaluate health programs and services that promote health and provide care to individuals, groups and communities.

Hearing Aid Practitioner

Hearing aid practitioners evaluate clients' hearing acuity, sensitivity and communication, and select, fit, service and repair hearing instruments.

Kinesiologist

Kinesiologists study human movement and look for ways to improve the efficiency and performance of the human body at work, in sport and in daily life.

Life Skills Coach

Life skills coaches lead experiential learning groups. They prepare learners to deal effectively with personal issues by guiding them through activities such as self discovery and behaviour identification exercises.

Medical Secretary

Medical secretaries support doctors and other health care professionals by performing a wide variety of clerical and administrative tasks such as scheduling appointments, word processing, bookkeeping/accounting, photocopying, filing and answering telephone calls and correspondence.

Medical Transcriptionist

Medical transcriptionists are medical language specialists who interpret and transcribe medical dictation that details patient care during and after an illness or injury.

Ophthalmic Assistant

Ophthalmic assistants assist ophthalmologists (eye surgeons) with patient care.

Optical Technician

Optical technicians manufacture, assemble and repair eyeglasses according to prescriptions from optometrists or ophthalmologists.

Optician

Opticians, sometimes called ophthalmic dispensers, fit and adapt eye glasses, contact lenses, low vision aids and other optical appliances according to prescriptions.

Parole/Probation Officer

Parole officers and probation officers help offenders integrate into the community and, at the same time, protect the community by supervising offenders. Parole officers are employed by Correctional Services Canada to manage the conditional release of federal and provincial offenders. Probation officers are employed by Alberta Solicitor General to conduct investigations and prepare predisposition and presentence reports, and supervise offenders in the community.

Pharmacologist

Pharmacologists are biomedical scientists who investigate the mechanisms underlying the effects of drugs and chemicals on living systems. They use this knowledge to help design and evaluate chemical agents for the prevention and treatment of disease.

Physiologist

Physiologists are scientists who study the whole organism and cellular functioning in humans, animals and plants.

Prosthetic/Orthotic Technician

Prosthetic/orthotic technicians work with prosthetists and orthotists in the production, fabrication and repair of prostheses (artificial limbs) and orthoses (braces and supports) that are used to support weakened body parts, correct body defects or replace amputated limbs.

Prosthetist and Orthotist

Prosthetists and orthotists work from physicians' prescriptions to design, fabricate, fit and repair prosthetic devices (artificial limbs) and orthotic devices (braces and supports) which are used to support weakened body parts, correct body defects or replace lost limbs.

Recreation Therapist

Recreation therapists encourage and promote independent leisure lifestyles for people who have special needs.

Religious Leader

Religious leaders, including ministers, rabbis, imam, priests, pastors, chaplains, bishops, curates and leaders in other religious communities, conduct religious services and provide inspirational, philosophical and religious education and guidance to members of their communities.

Special Needs Teacher

Special needs teachers work primarily with children who require special instructional services to help them learn and develop to their potential.

Sterile Processing Technician

Sterile processing technicians gather, disassemble, clean, assemble, sterilize, store and distribute hospital instruments, supplies and equipment for re-use.

Toxicologist

Toxicologists investigate the possible harmful effects on living things of chemical agents (e.g. drugs, pesticides, food additives), physical agents (e.g. ionizing and electro-magnetic radiation) and

biological agents (e.g. plant and animal toxins).

Unit Clerk

Unit clerks perform a variety of reception, clerical and administrative tasks at nursing stations on the units or wards of hospitals, continuing care centres and other medical facilities.

University Professor

University professors are employed by degree-granting institutions to teach and produce works of art or conduct research and publish their research findings.

Volunteer Manager

Volunteer managers plan volunteer involvement in organizations and co-ordinate volunteer programs in a variety of settings.

Indirectly Related Profiles

People in the following occupations may use related knowledge in their work (e.g. medical illustrators) or work in health care or social assistance settings.

Accountant

Accounting Technician

Administrative Assistant

Baker

Biochemist

Biological Technician

Building Operator

Bus Driver

Canadian Forces Personnel - Commissioned Officer

Cashier

Chef

Chemical Technologist

Chemist

Child and Youth Care Worker

Civil Engineer

Civil Engineering Technologist

Collection Agent

College, Technical or Vocational Instructor

Computer and Network Operator

Computer Engineer

Computer Programmer

Computer Service Technician

Cook

Custodian

Customer Support Analyst

Demographer

Dispatcher

Dry Cleaning and Laundry Workers
Early Childhood Educator
Economist
Electronics Engineering Technologist
Ergonomist
Fitness Instructor
Food Scientist
Food Service Helper
Food Service Supervisor
Hairstylist
Helicopter Pilot
Human Resources Professional
Illustrator
Industrial Engineer
Industrial Engineering Technologist
Information Systems Consultant
Insurance Adjuster
Interior Designer
Internal Auditor
Interpreter
Kitchen Helper and Food Assembler
Landscape Gardener
Lawyer
Librarian
Library Technician
Management Consultant
Mediator
Microbiologist
Occupational Health and Safety Inspector
Occupational Hygienist
Operations Research Analyst
Paralegal
Physicist
Power Engineer
Private Trainer/Facilitator
Public Health Inspector
Public Relations Representative
Purchasing Agent
Receptionist

Recreation and Sport Administrator
Recreation Co-ordinator/Supervisor
Religious Leader
Safety Officer
Sales Representative (Wholesale, Nontechnical)
Security Guard
Shipper and Receiver
Sign Language Interpreter
Social Worker
Software Engineer
Special Needs Teacher
Statistician
Technical Sales Representative
Technical Writer
Translator
Truck Driver
University Professor
Warehousing Professionals
Webmaster
Word Processing Operator

Information, Culture and Recreation Industry

Many occupational profiles describe work in the information, culture and recreation industry. Following are seven lists:

1. profiles about occupations involved in providing information services
2. profiles about occupations in publishing, motion picture/sound recording, broadcasting or telecommunications
3. profiles about work involved in the production, preservation or exhibition of artistic, cultural or historic objects
4. profiles about live performance occupations
5. profiles about recreation and sport occupations
6. profiles about other occupations related to information, culture or recreation
7. indirectly related profiles about other types of work performed in information, culture or recreation organizations.

Information Services

Archivist

Archivists appraise, acquire, arrange, describe, preserve and facilitate the research of records that have ongoing value.

Data Administrator

Data administrators develop and implement data administration policy, standards and models.

Database Analyst

Database analysts are computer specialists who design, develop, modify and maintain database management systems to meet specific user needs.

Geomatics/Surveying Engineer

Geomatics/surveying engineers gather, model, analyze and manage spatially-referenced data (information identified according to location).

Librarian

Librarians assess the informational, educational, cultural and recreational needs of the community they serve, find resources to meet those needs, and provide access to and manage resources.

Library Clerk

Library clerks help librarians and library technicians by serving library users and performing many of the clerical tasks involved in library work.

Library Technician

Library technicians support and assist librarians by performing technical tasks involved in library work such as collection management, cataloguing and document delivery. They also provide reference services and may manage small corporate, school or public libraries.

Web Designer

Web designers create websites for the Internet and sites internal to their organizations.

Webmaster

Webmasters are responsible for the design, development, maintenance and success of World Wide Web sites on the Internet and sites internal to their organizations.

Publishing, Motion Picture/Sound Recording, Broadcasting and Telecommunications

Advertising Copywriter

Advertising copywriters write advertisements for print, outdoor and broadcast media, and write copy for Internet home pages and CD-ROM applications.

Animator

Animators create the illusion of movement by manipulating sequences of still images. They may use a variety of materials and techniques including computer software, drawings on paper and three-dimensional sculptures.

Announcer

Announcers read news, sports, weather, commercial and public service messages, and host live events as well as entertainment and information programs for broadcast on radio or television.

Broadcast Maintenance Technologist

Broadcast maintenance technologists install, test, inspect, modify, repair and maintain radio and television broadcasting systems.

Cartoonist

Cartoonists are artists who create cartoon-style illustrations for newspapers, advertisements, magazines, films, television, books, newsletters and greeting cards.

Casting Director

Casting directors are hired on contract by film, video, television and advertising companies to find suitable actors to audition for particular parts or characters. Directors or producers have the final say in who is hired for each part.

Cinematographer

Cinematographers use camera, lighting and related equipment to create the desired visual mood or "feel" for a film or video production.

Critic

Critics review and analyze artistic and literary works and live performances. They may communicate their opinions via radio, television, newspapers, magazines, websites or books.

Editor

Editors help writers, publishers and others prepare written text that is accurate, appealing and effective for publication or broadcast.

Electronics Assemblers and Fabricators

Electronics assemblers and fabricators mount, secure, interconnect and adjust parts and components to assemble and fabricate electronic equipment.

Film Director

Film directors develop an artistic vision for a film production and work with others to implement that vision.

Graphic Designer

Graphic designers translate verbal and abstract concepts into meaningful visual communication.

Illustrator

Illustrators research and create drawings and pictures to visually portray their own or other people's ideas. They may create illustrations for items such as commercial packaging, games, magazines, storybooks, medical textbooks, annual reports, brochures or advertisements.

Lighting Technician

Lighting technicians set up, maintain and operate light fixtures, control devices and the associated

electrical and rigging equipment used for television, motion picture, and theatre and stage productions.

Make-Up Artist

Make-up artists prepare performers for stage, television and film appearances and photography shoots by applying make-up to portray a physical character, enhance beauty or create special effects.

Photographer

Photographers use their skills and artistic talent to capture people, products, events, fashion, landscapes, legal evidence and other subjects on film or digital media.

Photographic Processing Technician

Photographic processing technicians develop images and make prints and slides. They also may enlarge and retouch photographs or use computers to manipulate images.

Producer - Film, Radio, Television and Theatre

Producers co-ordinate the making of films, theatre productions, television and radio programs including everything from the initial concept to final production and distribution.

Recording/Sound Engineer

Recording and sound engineers use a variety of techniques and electronic equipment to record, mix, process, manipulate and edit sound.

Reporter

Reporters gather information and write articles for print media (newspapers and magazines) or prepare news items (written, audio or videotaped) for broadcast on radio or television.

Stage Manager

Stage managers co-ordinate everything that happens during a stage performance: actors' movements and lines, props, scenery movements, lighting effects and sound effects. During rehearsals, stage managers co-ordinate schedules for the artistic and technical operation of the production.

Technical Writer

Technical writers translate complex technical information into simpler language. They shape and deliver information to meet the needs of a target audience.

Telecommunications Engineering Technologist

Telecommunications engineering technologists research, design, implement, analyze, manage and integrate wired and wireless voice and data networking and communications devices and systems.

Telephone Operator

Telephone operators operate computerized or conventional telephone systems to complete connections for telephone calls and provide information to customers.

Television Audio/Video Operator

Audio and video operators set up, prepare and operate television audio and video broadcasting equipment.

Television Camera Operator

Television camera operators operate television cameras and related equipment to record news, live events and productions for television broadcast.

Traffic Co-ordinator

Traffic co-ordinators prepare daily program logs (listings of the programming, including commercials, that will be put on the air on particular broadcast days) in the radio and television industry.

Utility Clerk

Utility clerks record information, receive payments, process forms, answer enquiries and handle complaints from the public regarding utility company services and policies.

Production, Preservation and Exhibition

Conservator

Conservators plan, co-ordinate and participate in the preservation and conservation of cultural property (contemporary, historic, prehistoric and enthnographic objects, natural history specimens, archival materials and works of art) and study environmental influences on artifact preservation.

Craftsperson

Craftspersons use artistic and manual skills to design and make objects that may be functional, ornamental or communicative.

Curator

Curators acquire, document, study, interpret, maintain and provide access to collections of artifacts (products of human hands) and/or specimens (natural history items). In smaller museums, historic sites or galleries, they may be responsible for the overall management of the facility. In larger institutions, curators are usually responsible for specific collections or represent particular academic disciplines.

Exhibit Designer

Exhibit designers work with others to research, plan, design and oversee the fabrication and installation of exhibits and displays.

Heritage Interpreter

Heritage interpreters provide information by conducting tours or role playing for visitors to museums, gallery exhibitions and historical, heritage and related sites.

Museum Technician

Museum technicians assist curators, conservators and other museum staff with functions such as researching, developing, managing and conserving museum collections, setting up exhibits and delivering public programs.

Painter/Printmaker

Painters and printmakers express artistic ideas in original paintings, mixed media drawings, etchings and other two-dimensional artistic works.

Sculptor

Sculptors express artistic ideas in original three-dimensional artworks in a wide variety of media, including sound and virtual reality.

Live Performance

Actor

Actors perform roles in dramatic productions on stage, television, radio and in the movies. They also perform in television and radio commercials, and work in media narration and voice-overs.

Choral Conductor

Choral conductors organize, direct and conduct choral groups such as community and school choirs, church choirs, children's choirs, small chamber choirs, college choral ensembles, opera choruses and other groups that specialize in particular periods or styles of music.

Choreographer

Choreographers express ideas through movement. They design dances and create dance movement

for professional dancers and dance companies, dance studios, amateur performing dance companies, musical theatre, opera, fashion shows, film, television productions and special events.

Composer

Composers create and write a wide variety of original music (e.g. symphonies, operas, ballet scores, musical theatre scores, jazz or rock pieces). They also write music for commercial mediums, including advertising jingles and film soundtracks.

Costume Designer

Costume designers plan and create costumes and clothing accessories for theatre, dance, opera, television, video and film productions.

Dancer

Dancers use their bodies to interpret feelings, ideas, moods, music and drama. They may perform alone or with others in a group, before live audiences or in front of television and film cameras.

Instrumental Musician

Instrumental musicians play musical instruments. They perform as soloists or with orchestras, small ensembles or popular bands before live audiences, in recording studios or in workshop situations.

Lighting Designer

Lighting designers design and plan lighting effects for theatre, dance, opera, television, video and film productions.

Lighting Technician

Lighting technicians set up, maintain and operate light fixtures, control devices and the associated electrical and rigging equipment used for television, motion picture, and theatre and stage productions.

Make-Up Artist

Make-up artists prepare performers for stage, television and film appearances and photography shoots by applying make-up to portray a physical character, enhance beauty or create special effects.

Model

Models enhance and promote the sale of consumer goods, new fashion designs and other business products and services.

Music Copyist

Music copyists prepare individual parts (instrumental and vocal) from musical scores. They may copy all of the music on manuscript paper exactly as written by the composer or arranger, or input the correct information into a music copying computer program.

Orchestra/Band Conductor

Orchestra and band conductors produce their own interpretations of musical works by directing performers in musical groups such as chamber orchestras, wind ensembles, concert bands, symphony orchestras, jazz bands and orchestras for ballet and opera performances.

Orchestrator/Arranger

Orchestrators transcribe musical compositions into scores and assign specific passages to particular instruments to add desired variations of sound. **Arrangers** rewrite original musical scores in different musical styles by changing the rhythm, harmony or tempo.

Recording/Sound Engineer

Recording and sound engineers use a variety of techniques and electronic equipment to record, mix, process, manipulate and edit sound.

Set Designer

Set designers design and plan the creation of settings, scenic environments and properties (props) for theatre, dance, opera, television, video and film productions.

Singer

Singers perform musical arrangements as soloists or members of vocal groups or choirs.

Songwriter

Songwriters may compose both the melody and the lyrics (words) to a song or write only the words.

Stage Manager

Stage managers co-ordinate everything that happens during a stage performance: actors' movements and lines, props, scenery movements, lighting effects and sound effects. During rehearsals, stage managers co-ordinate schedules for the artistic and technical operation of the production.

Theatre Director

Theatre directors make artistic decisions about stage productions and consult with producers about everything from selecting the story or idea, the cast and sometimes the crew to overseeing rehearsals.

Recreation and Sport

Athletic Therapist

Athletic therapists work with other health care professionals to advise athletes and coaches on the prevention and treatment of sports injuries, or treat members of the public who have musculoskeletal injuries.

Coach

Coaches recruit, train and instruct athletes to produce the best sports performances possible. Their job titles generally reflect the sport in which they specialize (e.g. hockey coach, baseball coach, swim coach, figure skating coach) or their position relative to others in an organization (e.g. head coach, club coach).

Fitness Instructor

Fitness instructors promote exercise as a healthy lifestyle choice and teach students, privately or in groups, strengthening, endurance, aerobic, flexibility or weight training exercises.

Golf Professional

Golf professionals teach and promote the game of golf and provide related services for golfers. Some golf professionals play tournament golf; others manage golf and recreation facilities.

Outdoor Sport/Recreation Guide

Outdoor sport and recreation guides organize and conduct outdoor activities such as mountain expeditions, rafting trips, hunting trips, fishing trips and trail rides.

Professional Athlete

Professional athletes compete in sports either individually or as team members at the paid professional level.

Recreation and Sport Administrator

Recreation and sport administrators plan, organize and direct sport and recreation programs and services in accordance with policies set by management, owners, boards of directors or executive committees.

Recreation Co-ordinator/Supervisor

Recreation co-ordinators administer and oversee recreation programs and leisure services.

Recreation Facility Operator

Recreation facility operators maintain and supervise the use of recreational facilities ranging from ice arenas and swimming pools to sports fields and tennis courts.

Sports Instructor

Sports instructors teach the basics of a particular sport (e.g. skiing, swimming, baseball) to beginners and recreational athletes, or help experienced athletes further develop their skills.

Sports Official

Sports officials ensure that established rules and regulations are observed at sporting events (games or competitions).

Other Profiles Related to Information, Culture and Recreation

Fashion Designer

Fashion designers create new styles of clothing and accessories such as jewellery, belts, gloves and hats.

Industrial Designer

Industrial designers conceptualize and produce designs for a wide variety of products and systems (e.g. furniture, electronics, appliances, tools, automobiles, sporting goods, architectural details, signage).

Interior Decorator

Interior decorators assist clients in co-ordinating the decorative aspects of interior spaces.

Interior Designer

Interior designers create and enhance interior spaces to improve quality of life, increase productivity and protect public health, safety and welfare.

Kinesiologist

Kinesiologists study human movement and look for ways to improve the efficiency and performance of the human body at work, in sport and in daily life.

Special Event Co-ordinator

Special event co-ordinators plan, organize and co-ordinate conferences, meetings, seminars, exhibitions, trade shows, festivals and other special events.

Tour Guide

Tour guides escort individuals or groups of people on tours and describe points of interest.

Travel Guide

Travel guides escort individuals or groups of people on holiday tours.

University Professor

University professors are employed by degree-granting institutions to teach and produce works of art or conduct research and publish their research findings.

Visual Merchandiser

Visual merchandisers capture consumers' attention through the placement of merchandise, signage and interior displays in retail stores and shopping malls.

Indirectly Related Profiles

People in the following occupations may work in information, culture or recreation settings.

Accountant

Accounting Technician

Administrative Assistant
Animal Care Attendant
Animal Health Technologist
Building Operator
Call Centre Agent
Cashier
Collection Agent
Commercial Diver
Computer Engineer
Computer Programmer
Computer Service Technician
Custodian
Customer Support Analyst
Demographer
Dispatcher
Ecologist
Economist
Electrical Engineer
Electrical Engineering Technologist
Elevator Constructor
Farm Worker/Technician
Financial Analyst
Fundraiser
Human Resources Professional
Information Systems Consultant
Internal Auditor
Interpreter
Landscape Architectural Technologist
Landscape Gardener
Lawyer
Legal Secretary
Management Consultant
Marketing Manager
Musical Instrument Repair Technician
Physicist
Power Engineer
Private Trainer/Facilitator
Property Manager
Public Relations Representative

Purchasing Agent
Receptionist
Safety Officer
Sales Representative (Wholesale, Nontechnical)
Security Guard
Shipper and Receiver
Sign Language Interpreter
Technical Sales Representative
Translator
Truck Driver
Turfgrass Management Specialist
Volunteer Manager
Warehousing Professionals

Management, Administrative and Other Support Services Industry

Many occupational profiles describe work in organizations that support the day-to-day operations of other organizations by providing specialized services. Following are five lists of profiles about occupations involved in:

1. administering, directing and co-ordinating day-to-day business operations
2. providing maintenance services or cleaning buildings, carpets or clothing
3. providing travel-related services
4. collecting and hauling waste materials, or other waste management activities
5. providing other support services (e.g. pest control, landscaping, trade show co-ordination, investigation or security).

Business Administration Services

Accountant

Accountants provide financial reporting and consulting services for organizations and individuals.

Accounting Technician

Accounting technicians maintain systematic records of business transactions and verify and record those transactions. They use computers to calculate, prepare and process invoices, accounts payable and receivable, budget documents and other routine financial records.

Administrative Assistant

Administrative assistants perform administrative duties ranging from general office tasks to acting as special assistants in particular departments.

Call Centre Agent

Call centre agents respond to questions and inquiries, resolve customer problems and provide information about company policies, products and services over the phone, by fax and via the Internet.

Collection Agent

Collection agents use various strategies to collect money owed on past due accounts including letter writing, telephone calls and credit management.

Fundraiser

Fund-raisers, sometimes called development officers, plan and organize annual fund-raising programs, special gift appeals and campaigns to raise money for particular groups or causes (e.g. community agencies, arts organizations, educational institutions, hospitals and other non-profit organizations).

Human Resources Professional

Human resources professionals facilitate the effective use of human resources to achieve organizational goals and objectives. They advise all levels of their organizations regarding people management, develop employee recruitment and retention programs, assist in the selection of job candidates, facilitate employee professional development, and develop and administer other human resource programs.

Property Manager

Property managers oversee the administration, maintenance, operation and improvement of residential, commercial and industrial properties and represent the interests of property owners.

Public Relations Representative

Public relations representatives help organizations achieve their objectives by facilitating

communication links between organizations and the audiences they wish to reach.

Receptionist

Receptionists provide a vital link between customers or clients and an organization's staff and services.

Shipper and Receiver

Shippers and receivers wrap, pack and unpack, store, ship, receive and record the movement of parts, supplies, materials, equipment and stock to and from retailers, wholesalers, manufacturing companies, and other commercial and industrial organizations.

Warehousing Professionals

Warehousing professionals are responsible for general warehousing activities such as shipping and receiving and planning and managing the flow of goods into, within and from organizations.

Word Processing Operator

Word processing operators use computer programs to produce, store and print documents such as letters, reports and tables.

Cleaning and Maintenance Services

Auto Detailer

Auto detailers clean and refurbish the interiors and exteriors of automobiles.

Building Superintendent

Building superintendents maintain and manage commercial, institutional and residential properties.

Carpet and Upholstery Cleaner

Carpet and upholstery cleaners operate cleaning machines to clean carpets, rugs and upholstered furniture at customers' premises or in cleaning plants.

Custodian

Custodians clean building interiors, furnishings and equipment.

Travel Services

Airline Ticket Agent

Airline ticket agents make reservations and sell tickets to passengers travelling by air.

Tour Guide

Tour guides escort individuals or groups of people on tours and describe points of interest.

Travel Consultant

Travel consultants represent travel suppliers. They advertise, promote and sell a wide variety of travel services to the public.

Travel Guide

Travel guides escort individuals or groups of people on holiday tours.

Waste Collection, Recovery and Remediation Services

Ecologist

Ecologists study the relationships of living things to one another and to their environment, and examine the effects of a wide range of factors such as population size, rainfall, temperature, forest fires and major construction projects.

Environmental Engineer

Environmental engineers design systems, processes and equipment for air, water and soil pollution assessment, prevention and control, solid and hazardous waste management, and the remediation of contaminated sites.

Hazardous Waste Management Technologist

Hazardous waste management technologists provide information and advice on the packaging, handling and disposal of toxic wastes; conduct inspections and waste audits; investigate environmental incidents; and monitor and control the clean-up of contaminated land, water and air.

Municipal Recycling Truck Driver

Municipal recycling truck drivers collect, sort and transport recyclable waste materials such as glass, plastic, metal and paper.

Municipal Recycling Waste Handler

Municipal recycling waste handlers sort recyclable domestic and commercial waste materials such as glass, plastic, metal and paper.

Pollution Control Technologist

Pollution control technologists conduct inspections, tests and field investigations to determine the extent of existing air, water or soil contamination and find ways to control and prevent contamination.

Refuse Collector

Refuse collectors pick up non-recyclable waste materials from homes, apartment buildings and businesses along designated routes. They may be employed by municipalities or for private waste management companies.

Refuse Truck Driver

Refuse truck drivers pick up non-recyclable waste materials from homes, apartment buildings and businesses along designated routes, and transport them to landfill sites or incinerators for disposal. They may be employed by municipalities or private waste management companies.

Toxicologist

Toxicologists investigate the possible harmful effects on living things of chemical agents (e.g. drugs, pesticides, food additives), physical agents (e.g. ionizing and electro-magnetic radiation) and biological agents (e.g. plant and animal toxins).

Other Support Services

Landscape Gardener

Landscape gardeners work with other trades to carry out landscaping operations and design in a variety of environments. These environments include residential, commercial and public grounds, playgrounds, golf courses, garden centres, tree nurseries, greenhouses and interior landscapes.

Locksmith

Locksmiths install, adjust and repair locks, make keys and change lock combinations. They work on residential, automotive, commercial and institutional locksets and door hardware. Locksmiths may also install and maintain more sophisticated security systems.

Pest Control Operator

Pest control operators, sometimes called fumigators, exterminators or structural pesticide applicators, use a variety of methods to control and prevent the spread of insects and other pests that may infest private homes, restaurants, warehouses, business establishments and surrounding areas.

Private Investigator

Private investigators gather information and conduct surveillance to secure evidence relating to a wide range of private, corporate and legal interests.

Security Guard

Security guards protect an organization's property, personnel and information against fire, theft, vandalism and illegal entry.

Special Event Co-ordinator

Special event co-ordinators plan, organize and co-ordinate conferences, meetings, seminars, exhibitions, trade shows, festivals and other special events.

Metals, Metal Fabrication and Machinery Manufacturing Industry

A number of occupational profiles describe work in the metal fabrication and machinery manufacturing industry. Following are three lists:

1. profiles about occupations directly involved in making metal products
2. profiles about occupations related to metal fabrication and machinery manufacturing
3. indirectly related profiles about other types of work performed in this industry.

Making Metal Products

Boilermaker

Boilermakers build, erect, repair, test and maintain all types of boilers, tanks and pressure vessels, and perform all types of structural and plate work on dust, air, gas, steam, oil, water and other liquid-tight pressure containers.

Farrier

Farriers trim horses' hooves and, when necessary, forge metal bars into custom-made horseshoes or shape commercial shoes to fit and suit a particular horse.

Machinist

Machinists set up and operate precision metal cutting and grinding machines such as lathes, milling machines, drills and grinders to manufacture and repair products made from metals, plastics, rubber textiles, fibreglass and space age alloys.

Sheet Metal Worker

Sheet metal workers design, fabricate, assemble, install and repair sheet metal products.

Steel Detailer

Steel detailers are specialized drafters who produce detailed shop, fabrication and installation drawings.

Structural Steel and Plate Fitter

Structural steel and plate fitters lay out, prepare and assemble structural steel and steel vessels, containers and miscellaneous components.

Tool and Die Maker

Tool and die makers build and repair the special tools, metal moulds and patterns used in manufacturing.

Welder

Welders join and sever metal components and make metal parts, tools, machines and equipment.

Related Profiles

Automated Systems Technologist

Automated systems technologists analyze, implement, maintain and design electro-mechanical (automated) systems. These systems often include mechanical components, sensors, actuators and control systems and may include stationary or mobile robots.

Drafting Technician

Drafting technicians prepare engineering and architectural drawings, plans, diagrams and layouts. They may work independently as part of multidisciplinary teams or support the work of

technologists, engineers, architects and other professionals.

Engineering Design and Drafting Technologist

Engineering design and drafting technologists develop engineering designs and drawings from preliminary concepts and specifications, and prepare technical reports, construction specifications, cost/materials estimates and contract/tender documents.

Industrial Engineer

Industrial engineers determine the most effective ways for an organization to use its basic resources: people, machines, materials, money and time.

Industrial Engineering Technologist

Industrial engineering technologists gather and analyze information about how people, machines and materials are used in organizations to ensure that products and services are delivered in the most cost effective and timely manner possible.

Manufacturing Engineer

Manufacturing engineers design, implement, direct and co-ordinate manufacturing system materials and processes to achieve the most efficient, cost effective and high quality production possible in a safe and environmentally responsible manner.

Materials Engineering Technologist

Materials engineering technologists work in engineering teams that select and test materials for particular industrial and engineering uses and investigate materials-related problems.

Materials/Metallurgical Engineer

Materials engineers are involved in the development, processing, application and evaluation of metals and materials.

Mechanical Engineer

Mechanical engineers research, design and evaluate machines, devices, equipment, systems and processes, and plan and oversee their development, installation, operation and maintenance.

Mechanical Engineering Technologist

Mechanical engineering technologists may work independently or with mechanical engineers in designing, drawing, developing and modifying various types of products, machines, mechanical systems and manufacturing processes.

Millwright

Millwrights install, maintain, repair and troubleshoot stationary industrial machinery and mechanical equipment in factories, production plants and recreational facilities.

Safety Officer

Safety officers facilitate the development, implementation and maintenance of workplace safety programs.

Indirectly Related Profiles

People in the following occupations may be employed in this industry.

Accountant

Accounting Technician

Administrative Assistant

Crane and Hoisting Equipment Operator

Custodian

Heavy Equipment Operator
Human Resources Professional
Occupational Hygienist
Public Relations Representative
Security Guard
Shipper and Receiver

Mineral Products Manufacturing Industry

No occupational profiles describe work that is directly involved in manufacturing mineral products such as paving stones, bricks, ceramic tiles, cement or gypsum products. Following are two lists:

1. profiles related to manufacturing mineral products
2. indirectly related profiles about other types of work performed in this industry.

Related Profiles

Automated Systems Technologist

Automated systems technologists analyze, implement, maintain and design electro-mechanical (automated) systems. These systems often include mechanical components, sensors, actuators and control systems and may include stationary or mobile robots.

Concrete Finisher

Concrete finishers place and finish concrete floors, driveways, sidewalks, curbs, bridge decks and other concrete structures.

Craftsperson

Craftspersons use artistic and manual skills to design and make objects that may be functional, ornamental or communicative.

Glazier

Glaziers cut and install glass and aluminum systems for commercial, residential and automotive applications.

Industrial Engineer

Industrial engineers determine the most effective ways for an organization to use its basic resources: people, machines, materials, money and time.

Industrial Engineering Technologist

Industrial engineering technologists gather and analyze information about how people, machines and materials are used in organizations to ensure that products and services are delivered in the most cost effective and timely manner possible.

Instrument Technician

Instrument technicians install, maintain and repair the measuring and control instruments used in industrial and commercial processing.

Manufacturing Engineer

Manufacturing engineers design, implement, direct and co-ordinate manufacturing system materials and processes to achieve the most efficient, cost effective and high quality production possible in a safe and environmentally responsible manner.

Materials Engineering Technologist

Materials engineering technologists work in engineering teams that select and test materials for particular industrial and engineering uses and investigate materials-related problems.

Materials/Metallurgical Engineer

Materials engineers are involved in the development, processing, application and evaluation of metals and materials.

Millwright

Millwrights install, maintain, repair and troubleshoot stationary industrial machinery and

mechanical equipment in factories, production plants and recreational facilities.

Operations Manager

Operations managers direct and co-ordinate the operation of manufacturing, service delivery and production departments in industrial, commercial and government organizations.

Operations Research Analyst

Operations research analysts use mathematical modelling and information technology to develop decision support systems for decision-makers in public and private organizations.

Safety Officer

Safety officers facilitate the development, implementation and maintenance of workplace safety programs.

Warehousing Professionals

Warehousing professionals are responsible for general warehousing activities such as shipping and receiving and planning and managing the flow of goods into, within and from organizations.

Indirectly Related Profiles

People in the following occupations may be employed by mineral products manufacturers.

Accountant

Accounting Technician

Administrative Assistant

Crane and Hoisting Equipment Operator

Custodian

Heavy Equipment Operator

Security Guard

Shipper and Receiver

Truck Driver

Mining Industry

Many occupational profiles describe work in underground mining, surface mining, and associated operations such as mills and preparation plants. Following are three lists:

1. profiles about occupations involved in mining metallic minerals (ores) and non-metallic minerals (except coal), drilling for minerals (other than oil and gas), or providing mining services on a contract or fee basis
2. profiles about other occupations related to mining
3. indirectly related profiles about other types of work required in mining companies and related services.

Mining Operations

Blaster

Blasters break up rock and demolish structures by placing and detonating explosives.

Exploration Geophysicist

Geophysicists use the principles of physics, mathematics and geology to study the surface and internal composition of the earth. Exploration geophysicists look for oil, natural gas, water and minerals for economic exploitation and for environmental projects.

Geological and Geophysical Technologist

Geological and geophysical technologists may work independently or with a team of geologists, geophysicists, mining engineers or petroleum engineers.

Geologist

Geologists study the nature and history of the Earth's crust and apply their knowledge in exploring for minerals and hydrocarbons (e.g. oil and gas), developing resources for production, building engineering foundations and stable slopes, finding and evaluating ground water supplies and conducting environmental investigations.

Hydrometric Technician/Technologist

Hydrometric technicians and technologists may work independently or provide technical support for hydrologists and related scientists and engineers.

Meteorologist

Meteorologists study the physics, chemistry and dynamics of the atmosphere and its interaction with land and water surfaces, weather, climate, climate change and their effect on people's health and safety, the economy and the earth's ecosystems.

Mining Engineer

Mining engineers develop and apply methods of locating, extracting and preparing minerals to be used in manufacturing and energy industries.

Seismic Observer

Seismic observers operate geophysical recording instruments used in seismic field tests and perform routine maintenance to ensure optimum data quality.

Seismic Worker

Seismic workers conduct seismic tests in which controlled explosions or vibrations create sound waves in the earth's surface and geophysical instruments record seismic data.

Surface Mining Equipment Operator

Surface mining equipment operators use heavy equipment to recover minerals from near the earth's surface (open pit or strip mining).

Underground Miner

Underground mining equipment operators use different types and sizes of equipment to extract minerals from beneath the earth's surface and construct mine tunnels, passageways and shafts.

Other Profiles Related to Mining

Geomatics/Surveying Engineer

Geomatics/surveying engineers gather, model, analyze and manage spatially-referenced data (information identified according to location).

Geomatics/Surveying Technologist

Geomatics technologists conduct or participate in field surveys, office calculations and plan production to determine the exact locations and relative positions of natural features and man-made structures on the earth's surface, underground or underwater.

Heavy Equipment Operator

Heavy equipment operators use a variety of mobile machines and attachments to excavate, grade and landscape earth or move workers, materials and equipment.

Hydrologist

Hydrologists study the distribution and circulation of water in the atmosphere, on the earth's surface and in soil and underlying rocks.

Industrial Engineer

Industrial engineers determine the most effective ways for an organization to use its basic resources: people, machines, materials, money and time.

Industrial Engineering Technologist

Industrial engineering technologists gather and analyze information about how people, machines and materials are used in organizations to ensure that products and services are delivered in the most cost effective and timely manner possible.

Land Surveyor

Land surveyors plan, direct and conduct legal surveys to determine and interpret the location of boundaries, contours and other natural or human-made features.

Materials/Metallurgical Engineer

Materials engineers are involved in the development, processing, application and evaluation of metals and materials.

Safety Officer

Safety officers, often called safety co-ordinators, advisers, directors or managers, facilitate the development, implementation and maintenance of workplace safety programs.

Truck Driver

Truck drivers operate gasoline or diesel-powered trucks, tractor-trailers and similar vehicles to transport goods and materials over local routes or long distances.

Indirectly Related Profiles

People in the following occupations may work for mining companies.

Accountant

Accounting Technician

Administrative Assistant

Bus Driver

Chef
Computer and Network Operator
Concrete Finisher
Cook
Custodian
Customs Broker
Data Administrator
Database Analyst
Ecologist
Heavy Equipment Technician
Human Resources Professional
Information Systems Consultant
Information Systems Quality Assurance Analyst
Instrument Technician
Internal Auditor
Lawyer
Legal Secretary
Marketing Manager
Occupational Hygienist
Operations Manager
Paralegal
Parts Technician
Power Engineer
Public Relations Representative
Receptionist
Sales Representative (Wholesale, Nontechnical)
Software Engineer
Systems Auditor
Systems Security Analyst
Technical Sales Representative
Word Processing Operator

Oil and Gas Extraction Industry

A number of occupational profiles describe work involved in operating oil and gas field properties or providing related services. Following are three lists:

1. profiles about oil and gas field operations and services
2. profiles about oil and gas processing and related activities
3. indirectly related profiles about other types of work required in the oil and gas extraction industry.

Field Operations and Services

Commercial Diver

Commercial divers work in underwater construction and salvage operations inland (in rivers, lakes, canals and open roadsteads) or offshore (in harbours and oceans). They may participate in search and recovery operations or marine research, or do inspection, maintenance and repair work related to offshore oil and gas production.

Drilling and Service Rig Managers

Oil and gas well drilling and service rig managers supervise large crews of specialized workers on drilling and service rigs.

Drilling Rig Leasehand/Floorhand

Leasehands and floorhands perform general labourer duties on rigs that drill oil and gas wells and case wells with pipe.

Exploration Geophysicist

Geophysicists use the principles of physics, mathematics and geology to study the surface and internal composition of the earth. Exploration geophysicists look for oil, natural gas, water and minerals for economic exploitation and for environmental projects.

Field Production Operator

Field production operators are responsible for the initial separation processes or the special treatment required to ensure that impurities such as water, gas and sediments are removed from oil and gas in the field. Once separated, the oil or gas is transported by pipeline to refineries, gas plants or markets.

Geological and Geophysical Technologist

Geological and geophysical technologists may work independently or with a team of geologists, geophysicists, mining engineers or petroleum engineers.

Geologist

Geologists study the nature and history of the Earth's crust and apply their knowledge in exploring for minerals and hydrocarbons (e.g. oil and gas), developing resources for production, building engineering foundations and stable slopes, finding and evaluating ground water supplies and conducting environmental investigations.

Land Agent

Land agents negotiate and acquire interests in land for rights of way for well sites, pipelines, powerlines, roads and other surface uses.

Oil and Gas Well Loggers and Testers

Oil and gas well loggers and testers operate specialized tools, instruments and equipment to provide services related to oil and gas well drilling, completion and servicing.

Petroleum Engineer

Petroleum engineers are involved in the exploration and development of oil and gas fields. They apply the principles of geology, physics, chemistry and the engineering sciences to the recovery, development and processing of petroleum.

Petroleum Engineering Technologist

Petroleum engineering technologists are responsible for many of the technical activities involved in the production of oil and gas from conventional reserves, as well as from heavy oil and oil sands. Their knowledge and training is applied to petroleum drilling, geology, production procedures, formation evaluation and reservoir engineering.

Rig Technician

Rig technicians operate oil and gas drilling rigs. This newly defined trade has three journeyman certification levels commonly known as motorhand (level 1), derrickhand (level 2) and driller (level 3).

Seismic Observer

Seismic observers operate geophysical recording instruments used in seismic field tests and perform routine maintenance to ensure optimum data quality.

Seismic Worker

Seismic workers conduct seismic tests in which controlled explosions or vibrations create sound waves in the earth's surface and geophysical instruments record seismic data.

Service Rig Personnel

Oil and gas well service rig personnel perform general labourer duties on service rigs and operate specialized equipment to service, complete and abandon wells.

Surface Mining Equipment Operator

Surface mining equipment operators use heavy equipment to recover minerals from near the earth's surface (open pit or strip mining).

Well Service Equipment Operator

Well service equipment crews are called in at different times during the development of oil and gas wells for specialized oil field service operations such as cementing, acidizing, fracturing or nitrogen injection.

Wireline Field Supervisor

Wireline field supervisors direct the work of wireline operators and collect and process data from wireline operations.

Processing and Other Related Activities

Chemical Engineer

Chemical engineers develop processes, design equipment and provide technical and management services for plants that convert raw materials into a wide range of end products (e.g. chemicals, pharmaceuticals, food products, fuels, plastics, metals).

Chemical Engineering Technologist

Chemical engineering technologists are involved in process design, plant engineering, environmental control, engineering sales and plant operations. They may work independently or in an engineering team.

Chemical Technologist

Chemical technologists may work independently or with a team of chemists, chemical engineers and related professionals involved in quality control testing, product research and development, or environmental analysis.

Chemist

Chemists conduct research and develop new or improved products and processes, and test and evaluate their quality and safety.

Civil Engineer

Civil engineers plan, design and supervise the construction, maintenance and decommissioning of a wide variety of public and private structures and facilities.

Civil Engineering Technologist

Civil engineering technologists work with engineers, architects, surveyors and contractors in designing, developing and building civil engineering projects that are economical and functional and satisfy applicable standards and building codes.

Financial Analyst

Financial analysts collect, evaluate and apply financial, economic and statistical data to analyze and evaluate investment opportunities, or make financial decisions and recommendations.

Gas Pipeline Operators and Maintenance Workers

Gas pipeline operators and maintenance workers monitor the day to day operations of meter and compressor stations essential to the distribution and smooth flow of gas through pipelines.

Gas Plant Operator

Gas plant operators control automated processes which convert raw natural gas into forms that can be used by consumers.

Gas Utility Operator

Gas utility operators install and service gas utility pipeline systems that transport natural gas from its source to points of use such as building meter sets.

Geomatics/Surveying Engineer

Geomatics/surveying engineers gather, model, analyze and manage spatially-referenced data (information identified according to location).

Geomatics/Surveying Technologist

Geomatics technologists conduct or participate in field surveys, office calculations and plan production to determine the exact locations and relative positions of natural features and man-made structures on the earth's surface, underground or underwater.

Hazardous Waste Management Technologist

Hazardous waste management technologists provide information and advice on the packaging, handling and disposal of toxic wastes; conduct inspections and waste audits; investigate environmental incidents; and monitor and control the clean-up of contaminated land, water and air.

Hydrologist

Hydrologists study the distribution and circulation of water in the atmosphere, on the earth's surface and in soil and underlying rocks.

Hydrometric Technician/Technologist

Hydrometric technicians and technologists may work independently or provide technical support for hydrologists and related scientists and engineers.

Industrial Engineer

Industrial engineers are responsible for determining the most effective ways for an organization to use its basic resources: people, machines, materials, money and time.

Industrial Engineering Technologist

Industrial engineering technologists gather and analyze information about how people, machines and materials are used in organizations to ensure that products and services are delivered in the most cost effective and timely manner possible.

Instrument Technician

Instrument technicians install, maintain and repair the measuring and control instruments used in industrial and commercial processing.

Land Surveyor

Land surveyors plan, direct and conduct legal surveys to determine and interpret the location of boundaries, contours and other natural or human-made features.

Manufacturing Engineer

Manufacturing engineers design, implement, direct and co-ordinate manufacturing system materials and processes to achieve the most efficient, cost effective and high quality production possible in a safe and environmentally responsible manner.

Materials Engineering Technologist

Materials engineering technologists work in engineering teams that select and test materials for particular industrial and engineering uses and investigate materials-related problems.

Materials/Metallurgical Engineer

Materials engineers are involved in the development, processing, application and evaluation of metals and materials.

Mining Engineer

Mining engineers develop and apply methods of locating, extracting and preparing minerals to be used in manufacturing and energy industries.

Occupational Health and Safety Inspector

Occupational health and safety inspectors visit places of employment to detect unsafe or unhealthy working conditions, and ensure compliance with laws and regulations governing workplace safety.

Oil Pipeline Operators and Maintenance Workers

Oil pipeline operators and maintenance workers monitor and conduct the day to day operations of oil pipelines and associated facilities.

Power Engineer

Power engineers supervise, operate and maintain machinery and boilers that provide power, heat, refrigeration and other utility services to heavy industry and large building complexes.

Refinery/Upgrader Process Operator

Refinery/upgrader process operators are responsible for the day to day operations of oil refineries and upgraders.

Safety Officer

Safety officers, often called safety co-ordinators, advisers, directors or managers, facilitate the development, implementation and maintenance of workplace safety programs.

Indirectly Related Profiles

People in the following occupations may work in the oil and gas extraction industry.

Accountant

Accounting Technician

Administrative Assistant

Arbitrator
Archaeologist
Assessor
Automated Systems Technologist
Biochemist
Biological Technician
Boilermaker
Bus Driver
Chef
Computer and Network Operator
Computer Engineer
Computer Programmer
Computer Service Technician
Cook
Crane and Hoisting Equipment Operator
Custodian
Customer Support Analyst
Dispatcher
Drafting Technician
Ecologist
Economist
Electrical Engineer
Electrical Engineering Technologist
Electrician
Electronics Engineering Technologist
Engineering Design and Drafting Technologist
Environmental Auditor
Environmental Engineer
Ergonomist
Firefighter
Gasfitter
Geographer
Heavy Equipment Operator
Heavy Equipment Technician
Helicopter Pilot
Human Resources Professional
Industrial Designer
Information Systems Consultant
Insulator

Internal Auditor
Landscape Gardener
Lawyer
Librarian
Library Technician
Machinist
Management Consultant
Market Research Analyst
Marketing Manager
Mechanical Engineer
Mechanical Engineering Technologist
Mediator
Meteorologist
Microbiologist
Millwright
Occupational Hygienist
Oceanographer
Operations Manager
Operations Research Analyst
Paralegal
Parts Technician
Physicist
Plumber
Pollution Control Technologist
Power System Electrician
Private Trainer/Facilitator
Public Relations Representative
Purchasing Agent
Receptionist
Sales Representative (Wholesale, Nontechnical)
Security Guard
Shipper and Receiver
Software Engineer
Soil Scientist
Sprinkler Systems Installer
Statistician
Steamfitter-Pipefitter
Structural Steel and Plate Fitter
Technical Sales Representative

Technical Writer
Tool and Die Maker
Traffic Manager
Truck Driver
Warehousing Professionals
Water Well Driller
Web Designer
Webmaster
Welder
Word Processing Operator

Other Manufacturing Industry

Many occupational profiles describe work in organizations that manufacture products from raw materials. Following are five lists:

1. profiles about occupations involved in manufacturing wood and paper products
2. profiles about occupations involved in manufacturing electrical and electronic products
3. profiles about occupations involved in manufacturing miscellaneous products not included in other industry clusters (Food and Beverage Products Manufacturing, Manufactured Mineral Products, Metal Fabrication and Machinery, and Rubber, Plastics and Chemicals)
4. profiles about other occupations directly related to manufacturing
5. indirectly related profiles about other types of work performed in manufacturing establishments.

Wood and Paper Products

Binding and Finishing Machine Operators

Binding and finishing machine operators set up and operate machines and equipment that turn large sheets of paper from the printing press into finished print materials such as books, brochures and presentation folders.

Cabinetmaker

Cabinetmakers build and repair custom or production-type fixtures and furniture made of wood or wood substitutes.

Digital Printing Machine Operator

Digital printing machine operators use laser printers, computerized high speed colour copiers and other printing machines to print text, illustrations and designs on paper.

Pre-Press Technician

Pre-press technicians use computer software and computer-controlled machines and equipment to generate and combine text, graphics and other visual elements to prepare copy for printing.

Printing Press Operator

Printing press operators set up and operate sheet and web-fed presses that print single or multiple colours on paper.

Pulpmill Operator

Pulpmill operators operate and monitor processing machinery and equipment to produce pulp for use in the production of paper.

Sawfiler

Sawfilers repair, set and sharpen blades for band, chain, hand, circular and other types of saws.

Sawmill Machine Operator

Sawmill machine operators operate, monitor and control automated machines and equipment that process logs into lumber, shingles and shakes.

Upholsterer

Upholsterers cover furniture such as sofas and chairs with fabric, leather and other upholstery materials.

Electrical and Electronic Products

Computer Engineer

Computer engineers design, implement, evaluate, modify, maintain and test computer systems and related equipment.

Electrical Engineer

Electrical engineers design, construct, analyze and test electrical and electronic components and systems, and are responsible for their safe operation.

Electrical Engineering Technologist

Electrical engineering technologists apply their knowledge and understanding of electrical theory in business, engineering and industry settings.

Electronics Assemblers and Fabricators

Electronics assemblers and fabricators mount, secure, interconnect and adjust parts and components to assemble and fabricate electronic equipment.

Electronics Engineering Technologist

Electronics engineering technologists apply the practical and theoretical principles of electronics to the development of electronic-based circuits, and the operation and servicing of electronic equipment and systems.

Miscellaneous Products

Aircraft Maintenance Engineer

Aircraft maintenance engineers are licensed by Transport Canada to inspect and certify that work done on an aircraft complies with written airworthiness standards. They may specialize in different types of aircraft such as turbo jets, helicopters or propeller-driven airplanes.

Avionics Technologist

Avionics technologists modify, install, maintain and repair electronic equipment used in aviation.

Denturist

Denturists are dental health professionals who specialize in the field of removable oral prosthesis (dentures). In partnership with other health care professionals, they assess, design, fabricate, repair and insert complete and removable partial dentures and diagnose related problems.

Jeweller

Jewellers design, make, repair and appraise fine, fashion and costume jewellery.

Musical Instrument Repair Technician

Musical instrument repair technicians, including piano technicians, pipe organ repairers, band instrument repair technicians and violin repairers, maintain and repair musical instruments.

Optical Technician

Optical technicians manufacture, assemble and repair eyeglasses according to prescriptions from optometrists or ophthalmologists.

Prosthetic/Orthotic Technician

Prosthetic/orthotic technicians work with prosthetists and orthotists in the production, fabrication and repair of prostheses (artificial limbs) and orthoses (braces and supports) that are used to support weakened body parts, correct body defects or replace amputated limbs.

Prosthetist and Orthotist

Prosthetists and orthotists work from physicians' prescriptions to design, fabricate, fit and repair prosthetic devices (artificial limbs) and orthotic devices (braces and supports) which are used to support weakened body parts, correct body defects or replace lost limbs.

Watch Repairer

Watch repairers clean, oil, adjust and repair all types of mechanical and electronic clocks and watches.

Other Profiles Related to Manufacturing

Automated Systems Technologist

Automated systems technologists analyze, implement, maintain and design electro-mechanical (automated) systems. These systems often include mechanical components, sensors, actuators and control systems and may include stationary or mobile robots.

Chemical Technologist

Chemical technologists may work independently or with a team of chemists, chemical engineers and related professionals involved in quality control testing, product research and development, or environmental analysis.

Customs Broker

Customs brokers are employed by importers and exporters to clear goods through customs and ensure their timely delivery. They may also be involved in logistics or supply chain management.

Drafting Technician

Drafting technicians prepare engineering and architectural drawings, plans, diagrams and layouts. They may work independently as part of multidisciplinary teams or support the work of technologists, engineers, architects and other professionals.

Engineering Design and Drafting Technologist

Engineering design and drafting technologists develop engineering designs and drawings from preliminary concepts and specifications, and prepare technical reports, construction specifications, cost/materials estimates and contract/tender documents.

Hazardous Waste Management Technologist

Hazardous waste management technologists provide information and advice on the packaging, handling and disposal of toxic wastes; conduct inspections and waste audits; investigate environmental incidents; and monitor and control the clean-up of contaminated land, water and air.

Industrial Designer

Industrial designers conceptualize and produce designs for a wide variety of products and systems (e.g. furniture, electronics, appliances, tools, automobiles, sporting goods, architectural details, signage).

Industrial Engineer

Industrial engineers determine the most effective ways for an organization to use its basic resources: people, machines, materials, money and time.

Industrial Engineering Technologist

Industrial engineering technologists gather and analyze information about how people, machines and materials are used in organizations to ensure that products and services are delivered in the most cost effective and timely manner possible.

Instrument Technician

Instrument technicians install, maintain and repair the measuring and control instruments used in industrial and commercial processing.

Manufacturing Engineer

Manufacturing engineers design, implement, direct and co-ordinate manufacturing system materials and processes to achieve the most efficient, cost effective and high quality production possible in a safe and environmentally responsible manner.

Materials Engineering Technologist

Materials engineering technologists work in engineering teams that select and test materials for particular industrial and engineering uses and investigate materials-related problems.

Materials/Metallurgical Engineer

Materials engineers are involved in the development, processing, application and evaluation of metals and materials.

Mechanical Engineer

Mechanical engineers research, design and evaluate machines, devices, equipment, systems and processes, and plan and oversee their development, installation, operation and maintenance.

Mechanical Engineering Technologist

Mechanical engineering technologists may work independently or with mechanical engineers in designing, drawing, developing and modifying various types of products, machines, mechanical systems and manufacturing processes.

Millwright

Millwrights install, maintain, repair and troubleshoot stationary industrial machinery and mechanical equipment in factories, production plants and recreational facilities.

Operations Manager

Operations managers direct and co-ordinate the operation of manufacturing, service delivery and production departments in industrial, commercial and government organizations.

Operations Research Analyst

Operations research analysts use mathematical modelling and information technology to develop decision support systems for decision-makers in public and private organizations.

Pollution Control Technologist

Pollution control technologists conduct inspections, tests and field investigations to determine the extent of existing air, water or soil contamination and find ways to control and prevent contamination.

Power Engineer

Power engineers supervise, operate and maintain machinery and boilers that provide power, heat, refrigeration and other utility services to heavy industry and large building complexes.

Safety Officer

Safety officers, often called safety co-ordinators, advisers, directors or managers, facilitate the development, implementation and maintenance of workplace safety programs.

Sales Representative (Wholesale, Nontechnical)

Wholesale, nontechnical sales representatives sell their organizations' nontechnical goods and services to retail, commercial, industrial and professional clients.

Technical Sales Representative

Technical sales representatives sell technical goods and services to government, commercial and industrial establishments. They may sell commodities such as computers, software and business machines or services such as technical analysis and consulting services.

Technical Writer

Technical writers translate complex technical information into simpler language. They shape and deliver information to meet the needs of a target audience.

Traffic Manager

Traffic managers direct and co-ordinate the transportation of incoming materials from suppliers or raw material sources and outgoing products to distribution houses and customers.

Warehousing Professionals

Warehousing professionals are responsible for general warehousing activities such as shipping and receiving and planning and managing the flow of goods into, within and from organizations.

Indirectly Related Occupations

People in the following occupations may be employed by manufacturers.

Accountant

Accounting Technician

Administrative Assistant

Building Operator

Bus Driver

Collection Agent

Computer and Network Operator

Computer Programmer

Cook

Crane and Hoisting Equipment Operator

Custodian

Customer Support Analyst

Ecologist

Economist

Electrician

Food Service Helper

Food Service Supervisor

Graphic Designer

Heavy Equipment Operator

Heavy Equipment Technician

Home Economist

Human Resources Professional

Illustrator

Information Systems Consultant

Information Systems Quality Assurance Analyst

Internal Auditor

Lawyer

Legal Secretary

Management Consultant

Marketing Manager

Occupational Hygienist

Paralegal

Parts Technician
Public Relations Representative
Purchasing Agent
Receptionist
Security Guard
Shipper and Receiver
Software Engineer
Steamfitter-Pipefitter
Systems Auditor
Systems Security Analyst
Systems Tester
Translator
Truck Driver
Web Designer
Web Technician
Webmaster
Word Processing Operator

Petrochemicals, Rubber, Plastics and Chemicals Manufacturing Industry

Many occupational profiles describe work involved in transforming raw materials into rubber products, plastics and chemicals (intermediate or end products). Following are three lists:

1. profiles about occupations directly involved in rubber, plastics and chemicals manufacturing
2. profiles about occupations related to rubber, plastics and chemicals production
3. indirectly related profiles about other types of work performed in this industry.

Manufacturing

Biochemist

Biochemists study the chemical make-up of living matter and the molecular basis for processes that occur in cells. They develop medical, agricultural, food science, pharmacological, industrial, environmental and other practical applications.

Chemical Engineer

Chemical engineers develop processes, design equipment and provide technical and management services for plants that convert raw materials into a wide range of end products (e.g. chemicals, pharmaceuticals, food products, fuels, plastics, metals).

Chemical Engineering Technologist

Chemical engineering technologists are involved in process design, plant engineering, environmental control, engineering sales and plant operations. They may work independently or in an engineering team.

Chemical Technologist

Chemical technologists may work independently or with a team of chemists, chemical engineers and related professionals involved in quality control testing, product research and development, or environmental analysis.

Chemist

Chemists conduct research and develop new or improved products and processes, and test and evaluate their quality and safety.

Customs Broker

Customs brokers are employed by importers and exporters to clear goods through customs and ensure their timely delivery. They may also be involved in logistics or supply chain management.

Gas Plant Operator

Gas plant operators control automated processes which convert raw natural gas into forms that can be used by consumers.

Industrial Engineer

Industrial engineers are responsible for determining the most effective ways for an organization to use its basic resources: people, machines, materials, money and time.

Industrial Engineering Technologist

Industrial engineering technologists gather and analyze information about how people, machines and materials are used in organizations to ensure that products and services are delivered in the most cost effective and timely manner possible.

Instrument Technician

Instrument technicians install, maintain and repair the measuring and control instruments used in

industrial and commercial processing.

Manufacturing Engineer

Manufacturing engineers design, implement, direct and co-ordinate manufacturing system materials and processes to achieve the most efficient, cost effective and high quality production possible in a safe and environmentally responsible manner.

Materials Engineering Technologist

Materials engineering technologists work in engineering teams that select and test materials for particular industrial and engineering uses and investigate materials-related problems.

Materials/Metallurgical Engineer

Materials engineers are involved in the development, processing, application and evaluation of metals and materials.

Plastics Processing Technician

Plastics processing technicians set up, monitor, troubleshoot and optimize plastics processing equipment (including injection moulding and extrusion equipment).

Pollution Control Technologist

Pollution control technologists conduct inspections, tests and field investigations to determine the extent of existing air, water or soil contamination and find ways to control and prevent contamination.

Power Engineer

Power engineers supervise, operate and maintain machinery and boilers that provide power, heat, refrigeration and other utility services to heavy industry and large building complexes.

Refinery/Upgrader Process Operator

Refinery/upgrader process operators are responsible for the day to day operations of oil refineries and upgraders.

Safety Officer

Safety officers, often called safety co-ordinators, advisers, directors or managers, facilitate the development, implementation and maintenance of workplace safety programs.

Profiles of Related Occupations

Biologist

Biologists conduct research to learn more about living organisms and ecosystems, manage natural resources, and develop new practices and products in such diverse fields as environmental conservation, forensics and pest control.

College, Technical or Vocational Instructor

College, technical and vocational instructors provide instruction to adults in a wide variety of subject areas including vocational, technical, business or services training, trades, academic upgrading and university transfer courses.

Drilling Rig Leasehand/Floorhand

Leasehands and floorhands perform general labourer duties on rigs that drill oil and gas wells and case wells with pipe.

Field Production Operator

Field production operators are responsible for the initial separation processes or the special treatment required to ensure that impurities such as water, gas and sediments are removed from oil and gas in the field. Once separated, the oil or gas is transported by pipeline to refineries, gas plants

or markets.

Gas Pipeline Operators and Maintenance Workers

Gas pipeline operators and maintenance workers monitor the day to day operations of meter and compressor stations essential to the distribution and smooth flow of gas through pipelines.

Gas Utility Operator

Gas utility operators install and service gas utility pipeline systems that transport natural gas from its source to points of use such as building meter sets.

Hazardous Waste Management Technologist

Hazardous waste management technologists provide information and advice on the packaging, handling and disposal of toxic wastes; conduct inspections and waste audits; investigate environmental incidents; and monitor and control the clean-up of contaminated land, water and air.

Hydrologist

Hydrologists study the distribution and circulation of water in the atmosphere, on the earth's surface and in soil and underlying rocks.

Hydrometric Technician/Technologist

Hydrometric technicians and technologists may work independently or provide technical support for hydrologists and related scientists and engineers.

Millwright

Millwrights install, maintain, repair and troubleshoot stationary industrial machinery and mechanical equipment in factories, production plants and recreational facilities.

Oil Pipeline Operators and Maintenance Workers

Oil pipeline operators and maintenance workers monitor and conduct the day to day operations of oil pipelines and associated facilities.

Petroleum Engineer

Petroleum engineers are involved in the exploration and development of oil and gas fields. They apply the principles of geology, physics, chemistry and the engineering sciences to the recovery, development and processing of petroleum.

Petroleum Engineering Technologist

Petroleum engineering technologists are responsible for many of the technical activities involved in the production of oil and gas from conventional reserves, as well as from heavy oil and oil sands. Their knowledge and training is applied to petroleum drilling, geology, production procedures, formation evaluation and reservoir engineering.

Power System Electrician

Power system electricians install, maintain and repair electrical power generation, transmission and distribution systems and equipment.

University Professor

University professors are employed by degree-granting institutions to teach and produce works of art or conduct research and publish their research findings.

Indirectly Related Profiles

People in the following occupations may work for companies in the rubber, plastics and chemicals manufacturing industry.

Accountant

Accounting Technician

Administrative Assistant
Arbitrator
Automated Systems Technologist
Computer Engineer
Computer Programmer
Computer Service Technician
Cook
Custodian
Customer Support Analyst
Customs Broker
Demographer
Dispatcher
Ecologist
Economist
Financial Analyst
Heavy Equipment Operator
Heavy Equipment Technician
Human Resources Professional
Information Systems Consultant
Internal Auditor
Lawyer
Librarian
Library Technician
Management Consultant
Marketing Manager
Mediator
Occupational Health Nurse
Occupational Hygienist
Operations Manager
Power Engineer
Private Trainer/Facilitator
Public Relations Representative
Purchasing Agent
Receptionist
Safety Officer
Sales Representative (Wholesale, Nontechnical)
Security Guard
Shipper and Receiver
Software Engineer

Technical Sales Representative
Truck Driver
Warehousing Professionals
Web Designer
Webmaster
Word Processing Operator

Professional and Technical Services Industry

A great many occupational profiles describe occupations in which people are often self-employed or work for firms that provide professional or technical services on a fee-for-service or project basis. The following lists include profiles about:

1. accounting services
2. architectural, engineering and surveying services
3. artistic services
4. legal and protective services
5. management, scientific and technical services
6. other professional and technical services.

The **Related Profiles** list includes occupations in which many, but not most, people work on a fee-for-service or project basis.

Accounting Services

Accountant

Accountants provide financial reporting and consulting services for organizations and individuals.

Accounting Technician

Accounting technicians maintain systematic records of business transactions and verify and record those transactions. They use computers to calculate, prepare and process invoices, accounts payable and receivable, budget documents and other routine financial records.

Internal Auditor

Internal auditors conduct financial, systems and operational audits in their organizations. (External auditors are usually accountants who are not part of the organization being audited.)

Architectural, Engineering and Surveying Services

Agricultural Engineer

Agricultural engineers integrate engineering science and design with applied biological science to solve problems in agriculture, food and other resource industries.

Architect

Architects design building projects and advise clients regarding building projects. They prepare programs, sketches and cost estimates, produce scale construction drawings, write specifications and review on-site construction work.

Architectural Technologist

Architectural technologists work with architects, engineers and others in designing and developing plans and working drawings, estimating costs and supervising building construction projects.

Automated Systems Technologist

Automated systems technologists analyze, implement, maintain and design electro-mechanical (automated) systems. These systems often include mechanical components, sensors, actuators and control systems and may include stationary or mobile robots.

Civil Engineer

Civil engineers plan, design and supervise the construction, maintenance and decommissioning of a wide variety of public and private structures and facilities.

Civil Engineering Technologist

Civil engineering technologists work with engineers, architects, surveyors and contractors in designing, developing and building civil engineering projects that are economical and functional and

satisfy applicable standards and building codes.

Computer Engineer

Computer engineers design, implement, evaluate, modify, maintain and test computer systems and related equipment.

Drafting Technician

Drafting technicians prepare engineering and architectural drawings, plans, diagrams and layouts. They may work independently as part of multidisciplinary teams or support the work of technologists, engineers, architects and other professionals.

Electrical Contractor

Electrical contractors erect or install electrical installations or equipment. They may also repair, service or maintain electrical installations or equipment.

Electrical Engineer

Electrical engineers design, construct, analyze and test electrical and electronic components and systems, and are responsible for their safe operation.

Electrical Engineering Technologist

Electrical engineering technologists apply their knowledge and understanding of electrical theory in business and industry settings.

Electronic Technician

Electronic technicians service and repair household and business electronic equipment such as radios and televisions, compact disc players and personal computer systems.

Electronics Engineering Technologist

Electronics engineering technologists apply the practical and theoretical principles of electronics to the development of electronic-based circuits, and the operation and servicing of electronic equipment and systems.

Engineering Design and Drafting Technologist

Engineering design and drafting technologists develop engineering designs and drawings from preliminary concepts and specifications, and prepare technical reports, construction specifications, cost/materials estimates and contract/tender documents.

Environmental Engineer

Environmental engineers design systems, processes and equipment for air, water and soil pollution assessment, prevention and control, solid and hazardous waste management, and the remediation of contaminated sites.

Geomatics/Surveying Engineer

Geomatics/surveying engineers gather, model, analyze and manage spatially-referenced data (information identified according to location).

Geomatics/Surveying Technologist

Geomatics technologists conduct or participate in field surveys, office calculations and plan production to determine the exact locations and relative positions of natural features and man-made structures on the earth's surface, underground or underwater.

Industrial Designer

Industrial designers conceptualize and produce designs for a wide variety of products and systems (e.g. furniture, electronics, appliances, tools, automobiles, sporting goods, architectural details, signage).

Industrial Engineer

Industrial engineers are responsible for determining the most effective ways for an organization to use its basic resources: people, machines, materials, money and time.

Instrumentation Engineering Technologist

Instrumentation engineering technologists apply their knowledge of pneumatic, electronic and microcomputer measurement and control systems in business, engineering and industry settings.

Interior Designer

Interior designers create and enhance interior spaces to improve quality of life, increase productivity and protect public health, safety and welfare.

Land Surveyor

Land surveyors plan, direct and conduct legal surveys to determine and interpret the location of boundaries, contours and other natural or human-made features.

Landscape Architect

Landscape architects combine artistic and creative perspectives with scientific and engineering knowledge to create, manage and conserve environments that are both functional and attractive. Their goal is to create harmony between natural environments, land features and architectural structures.

Manufacturing Engineer

Manufacturing engineers design, implement, direct and co-ordinate manufacturing system materials and processes to achieve the most efficient, cost effective and high quality production possible in a safe and environmentally responsible manner.

Materials/Metallurgical Engineer

Materials engineers are involved in the development, processing, application and evaluation of metals and materials.

Mechanical Engineer

Mechanical engineers research, design and evaluate machines, devices, equipment, systems and processes, and plan and oversee their development, installation, operation and maintenance.

Software Engineer

Software engineers research, design, evaluate, modify, integrate, test and maintain software applications, technical environments, operating systems, embedded software, information warehouses and telecommunications software.

Artistic Services

Animator

Animators create the illusion of movement by manipulating sequences of still images. They may use a variety of materials and techniques including computer software, drawings on paper and three-dimensional sculptures.

Cartoonist

Cartoonists are artists who create cartoon-style illustrations for newspapers, advertisements, magazines, films, television, books, newsletters and greeting cards.

Composer

Composers create and write a wide variety of original music (e.g. symphonies, operas, ballet scores, musical theatre scores, jazz or rock pieces). They also write music for commercial mediums, including advertising jingles and film soundtracks.

Costume Designer

Costume designers plan and create costumes and clothing accessories for theatre, dance, opera, television, video and film productions.

Film Director

Film directors develop an artistic vision for a film production and work with others to implement that vision.

Graphic Designer

Graphic designers translate ideas and information into visual "concepts" designed to inform or persuade. For example, they may design or illustrate brochures, packaging, promotional materials, corporate logos, annual reports or websites.

Illustrator

Illustrators research and create drawings and pictures to visually portray their own or other people's ideas. They may create illustrations for items such as commercial packaging, games, magazines, storybooks, medical textbooks, annual reports, brochures or advertisements.

Lighting Designer

Lighting designers design and plan lighting effects for theatre, dance, opera, television, video and film productions.

Music Copyist

Music copyists prepare individual parts (instrumental and vocal) from musical scores. They may copy all of the music on manuscript paper exactly as written by the composer or arranger, or input the correct information into a music copying computer program.

Orchestra/Band Conductor

Orchestra and band conductors produce their own interpretations of musical works by directing performers in musical groups such as chamber orchestras, wind ensembles, concert bands, symphony orchestras, jazz bands and orchestras for ballet and opera performances.

Orchestrator/Arranger

Orchestrators transcribe musical compositions into scores and assign specific passages to particular instruments to add desired variations of sound. **Arrangers** rewrite original musical scores in different musical styles by changing the rhythm, harmony or tempo.

Producer - Film, Radio, Television and Theatre

Producers co-ordinate the making of films, theatre productions, television and radio programs including everything from the initial concept to final production and distribution.

Set Designer

Set designers design and plan the creation of settings, scenic environments and properties (props) for theatre, dance, opera, television, video and film productions.

Songwriter

Songwriters may compose both the melody and the lyrics (words) to a song or write only the words.

Theatre Director

Theatre directors make artistic decisions about stage productions and consult with producers about everything from selecting the story or idea, the cast and sometimes the crew to overseeing rehearsals.

Legal and Protective Services

Lawyer

Lawyers study and interpret points of law to advise clients of their rights and legal obligations, and

represent client interests in legal transactions and proceedings.

Legal and Realtime Reporter

Legal and realtime reporters write machine shorthand at a minimum speed of 225 words per minute to capture every word spoken in a variety of settings. Computer technology instantly translates shorthand notes into English text that can be displayed or printed.

Legal Secretary

Legal secretaries perform a variety of secretarial and administrative duties in law offices, the legal departments of large organizations, courts, real estate companies and land title offices.

Paralegal

Paralegals do independent legal work under the general supervision of lawyers. They perform routine legal and administrative functions and assist lawyers with more complex matters.

Private Investigator

Private investigators gather information and conduct surveillance to secure evidence relating to a wide range of private, corporate and legal interests.

Security Alarm Installer

Security alarm installers install and maintain electronic security alarm systems for homes, businesses and industrial properties.

Security Guard

Security guards protect an organization's property, personnel and information against fire, theft, vandalism and illegal entry.

Management and Technical Services

Administrative Assistant

Administrative assistants perform administrative duties ranging from general office tasks to acting as special assistants in particular departments.

Computer and Network Operator

Computer and network operators establish, operate, maintain and support the use of local area networks (LANs), wide area networks (WANs), mainframe networks and related hardware, software and peripheral equipment.

Computer Programmer

Computer programmers create, modify and test the forms, scripts and code that tell computers what to do.

Computer Service Technician

Computer service technicians install, service and configure computer systems and networks including desktop computers, servers and peripherals such as printers, disk drives and CD-ROM drives.

Customer Support Analyst

Customer support analysts answer computer-related questions, investigate complaints and work with others in a team environment to resolve users' software and hardware problems.

Customs Broker

Customs brokers are employed by importers and exporters to clear goods through customs and ensure their timely delivery. They may also be involved in logistics or supply chain management.

Demographer

Demographers plan and conduct research to study characteristics of human populations such as size,

growth, composition, mobility and distribution.

Ergonomist

Ergonomists study the relationships among people, equipment, and working or living environments, and apply their knowledge to enhance performance, comfort and safety.

Information Systems Consultant

Information systems consultants analyze, design and develop information systems business solutions and provide advice on a wide range of information systems issues.

Investment Underwriter

Investment underwriters help governments and corporations raise capital by providing financial advice and underwriting or distributing new securities.

Management Consultant

Management consultants are contracted by organizations to provide independent and objective advisory services in areas such as strategic planning, facilitation, quality assurance, education and training, investment, information technology, identification and analysis of management problems, solution development or strategy implementation.

Market Research Analyst

Market research analysts use data gathered about marketplace participants (customers, employers and competitors) and their responses to products and services. This information is used to improve market success.

Mathematician

Mathematicians use logical reasoning to study structure. They do fundamental research and develop techniques and insights that can be applied in a variety of fields, including physics, engineering, finance and organizational structure and decision making.

Operations Research Analyst

Operations research analysts use mathematical modelling and information technology to develop decision support systems for decision-makers in public and private organizations.

Statistician

Statisticians plan, organize, analyze and interpret studies to provide usable information for a wide range of activities. For example, they may be involved in agricultural or health research, evaluating government programs, assessing environmental problems, improving manufacturing or business processes, or forecasting future economic conditions.

Web Designer

Web designers create websites for the Internet and sites internal to their organizations.

Word Processing Operator

Word processing operators use computer programs to produce, store and print documents such as letters, reports and tables.

Other Professional and Technical Services

Advertising Account Executive

Advertising account executives co-ordinate the day to day activities involved in planning and implementing print and electronic media advertising campaigns.

Collection Agent

Collection agents use various strategies to collect money owed on past due accounts including letter writing, telephone calls and credit management.

Financial Planner

Financial planners develop personal financial plans for individuals and families. They analyze clients' net worth, financial resources, lifestyle preferences and goals, and make recommendations regarding how clients can achieve their financial goals.

Fundraiser

Fund-raisers, sometimes called development officers, plan and organize annual fund-raising programs, special gift appeals and campaigns to raise money for particular groups or causes (e.g. community agencies, arts organizations, educational institutions, hospitals and other non-profit organizations).

Human Resources Professional

Human resources professionals facilitate the effective use of human resources to achieve organizational goals and objectives. They advise all levels of their organizations regarding people management, develop employee recruitment and retention programs, assist in the selection of job candidates, facilitate employee professional development, and develop and administer other human resource programs.

Interpreter

Interpreters translate the spoken word from one language to another.

Occupational Hygienist

Occupational hygienists study, anticipate and evaluate hazards and stresses in workplaces, suggest changes to work environments and processes, and provide information to managers and workers on ways to reduce the risk of injury or illness from occupational hazards.

Personal Property/Equipment Appraiser

Personal property and equipment appraisers estimate the value of personal and household items, business assets, vehicles and/or machinery, and prepare reports for owners, buyers, insurance companies, lending institutions, government departments, lawyers, creditors and others.

Public Relations Representative

Public relations representatives help organizations achieve their objectives by facilitating communication links between organizations and the audiences they wish to reach.

Sign Language Interpreter

American Sign Language (ASL) - English interpreters facilitate communication among deaf, hard of hearing and hearing people, using both English and ASL.

Translator

Translators convert written text from one language to another, sometimes changing the structure of the original text but without changing the meaning.

Related Profiles

Many, but not most, people in the following occupations are self-employed or work for firms that provide professional or technical services on a fee-for-service or project basis.

Advertising Copywriter

Advertising copywriters write advertisements for print, outdoor and broadcast media, and write copy for Internet home pages and CD-ROM applications.

Airline Pilot

Airline pilots fly aircraft transporting passengers, cargo and mail. With the exception of some small aircraft, a captain and first officer work together on commercial flights.

Arbitrator

Arbitrators resolve disputes by hearing arguments and evidence, and rendering decisions that may be filed in a court of law and legally enforced.

Assessor

Assessors determine the value of land, buildings, businesses, structures and certain types of equipment for property tax purposes.

Auctioneer

Auctioneers arrange auction sales, evaluate goods and property, conduct bidding and sell items to the highest bidders.

Biologist

Biologists conduct research to learn more about living organisms and ecosystems, manage natural resources, and develop new practices and products in such diverse fields as environmental conservation, forensics and pest control.

Biotechnologist

Biotechnologists apply their knowledge of biochemistry, microbiology and molecular genetics to improve industrial processes and develop new processes in the agricultural, chemical and health care product industries (for example, in the production of drugs, antibiotics or vaccines).

Career Development Professional

Career development professionals advise, coach, provide information and support people who are planning, seeking and managing their life/work direction.

Chef

Chefs are managers who plan, direct and participate in food preparation and cooking activities in restaurants, hotels, institutions and other food establishments.

Chemical Engineer

Chemical engineers develop processes, design equipment and provide technical and management services for plants that convert raw materials into a wide range of end products (e.g. chemicals, pharmaceuticals, food products, fuels, plastics, metals).

Chemical Engineering Technologist

Chemical engineering technologists are involved in process design, plant engineering, environmental control, engineering sales and plant operations. They may work independently or in an engineering team.

College, Technical or Vocational Instructor

College, technical and vocational instructors provide instruction to adults in a wide variety of subject areas including vocational, technical, business or services training, trades, academic upgrading and university transfer courses.

Combined Laboratory and X-Ray Technologist

Combined laboratory and x-ray technologists conduct routine medical laboratory tests, perform radiography and electrocardiograms and set up, clean and maintain related equipment.

Creative Writer

Creative writers write literary works such as novels, short stories, essays, poetry, magazine articles, speeches, and scripts for radio, television, theatre, film and video productions.

Dietitian

Dietitians develop, implement and evaluate food and nutrition strategies to promote health and treat disease; manage food service systems; and develop and deliver related programs and policies.

Direct Distributor

Direct distributors demonstrate and sell products such as books, candles, clothing, cookware, cosmetics, craft supplies, gourmet food, home care items, toys and vitamins.

Drilling and Service Rig Managers

Oil and gas well drilling and service rig managers supervise large crews of specialized workers on drilling and service rigs.

Ecologist

Ecologists study the relationships of living things to one another and to their environment, and examine the effects of a wide range of factors such as population size, rainfall, temperature, forest fires and major construction projects.

English as a Second Language Teacher - Adults

English as a second language (ESL) teachers provide English language and lifeskills instruction to immigrants, international students and others whose first language is not English.

Entomologist

Entomologists study the classification, life cycle and habits of insects and related life forms, and plan and implement insect surveys and pest management programs.

Environmental Education Specialist

Environmental education specialists help create an awareness of the relationship between human activities and the natural environment. They develop and promote strategies that encourage others to make responsible choices regarding consumer decisions, government policies and corporate responsibilities.

Exhibit Designer

Exhibit designers work with others to research, plan, design and oversee the fabrication and installation of exhibits and displays.

Exploration Geophysicist

Geophysicists use the principles of physics, mathematics and geology to study the surface and internal composition of the earth. Exploration geophysicists look for oil, natural gas, water and minerals for economic exploitation and for environmental projects.

Fashion Designer

Fashion designers create new styles of clothing and accessories such as jewellery, belts, gloves and hats.

Financial Analyst

Financial analysts collect, evaluate and apply financial, economic and statistical data to analyze and evaluate investment opportunities, or make financial decisions and recommendations.

Food Science Technologist

Food science technologists work independently or provide technical support in laboratory analysis, food product development, processing, quality assurance or regulatory positions.

Food Scientist

Food scientists investigate the chemical, microbiological, physical and sensory nature of food, and apply their knowledge in the development, processing, preserving, packaging, distributing and storing of foodstuffs.

Forester

Foresters plan, administer and direct programs related to managing forested lands and related renewable resources.

Geneticist

Geneticists conduct research into the biochemical and physiological aspects of heredity, particularly the role of deoxyribonucleic acid (DNA), and carry out cytogenetic or molecular tests to aid in diagnosing disease.

Geological and Geophysical Technologist

Geological and geophysical technologists may work independently or with a team of geologists, geophysicists, mining engineers or petroleum engineers.

Geologist

Geologists study the nature and history of the Earth's crust and apply their knowledge in exploring for minerals and hydrocarbons (e.g. oil and gas), developing resources for production, building engineering foundations and stable slopes, finding and evaluating ground water supplies and conducting environmental investigations.

Helicopter Pilot

Helicopter pilots transport passengers and freight by helicopter, an aircraft which can move in any direction at varying speeds or remain stationary in the air.

Hydrologist

Hydrologists study the distribution and circulation of water in the atmosphere, on the earth's surface and in soil and underlying rocks.

Hydrometric Technician/Technologist

Hydrometric technicians and technologists may work independently or provide technical support for hydrologists and related scientists and engineers.

Insurance Adjuster

Insurance adjusters investigate insurance claims, make recommendations regarding the payment of benefits from insurance policies, and negotiate payments and settlements.

Insurance Agent/Broker

Insurance agents and brokers assess people's financial needs and advise them on how to protect themselves against financial loss. They may sell life, property, casualty, automobile or health insurance policies to individuals, businesses or public institutions.

Interpretive Naturalist

Interpretive naturalists explain the natural and scientific features of parks, botanical gardens and wilderness areas to visitors.

Investment Advisor

Investment advisors assist clients by providing investment advice and recommending the purchase or sale of securities. Taking into account a client's income, assets, age, tax burden and financial expectations, investment advisors help the client identify financial goals and recommend investments to assist in achieving those goals.

Mechanical Engineering Technologist

Mechanical engineering technologists may work independently or with mechanical engineers in designing, drawing, developing and modifying various types of products, machines, mechanical systems and manufacturing processes.

Mediator

Mediators are neutral third parties who assist people involved in disputes to find mutually acceptable resolutions to their conflicts.

Medical Transcriptionist

Medical transcriptionists are medical language specialists who interpret and transcribe medical dictation that details patient care during and after an illness or injury.

Messenger/Courier

Messengers sort, collect and deliver letters, telegrams, packages or messages; run errands; distribute office supplies and perform similar routine duties.

Meteorologist

Meteorologists study the physics, chemistry and dynamics of the atmosphere and its interaction with land and water surfaces, weather, climate, climate change and their effect on people's health and safety, the economy and the earth's ecosystems.

Microbiologist

Microbiologists study the growth and characteristics of micro-organisms (viruses, bacteria, fungi, parasites) and their interactions with their environment, and develop medical and industrial applications (for example, in the food processing industry).

Mining Engineer

Mining engineers develop and apply methods of locating, extracting and preparing minerals to be used in manufacturing and energy industries.

Model

Models enhance and promote the sale of consumer goods, new fashion designs and other business products and services.

Oceanographer

Oceanographers study all aspects of oceans including their boundaries, contents and role in the earth's climate system.

Oil and Gas Well Loggers and Testers

Oil and gas well loggers and testers operate specialized tools, instruments and equipment to provide services related to oil and gas well drilling, completion and servicing.

Painter and Decorator

Painters and decorators apply paint, wall coverings and other finishes to interior and exterior surfaces of buildings and other structures.

Petroleum Engineer

Petroleum engineers are involved in the exploration and development of oil and gas fields. They apply the principles of geology, physics, chemistry and the engineering sciences to the recovery, development and processing of petroleum.

Petroleum Engineering Technologist

Petroleum engineering technologists are responsible for many of the technical activities involved in the production of oil and gas from conventional reserves, as well as from heavy oil and oil sands. Their knowledge and training is applied to petroleum drilling, geology, production procedures, formation evaluation and reservoir engineering.

Pharmacologist

Pharmacologists are biomedical scientists who investigate the mechanisms underlying the effects of drugs and chemicals on living systems. They use this knowledge to help design and evaluate chemical agents for the prevention and treatment of disease.

Physiologist

Physiologists are scientists who study the whole organism and cellular functioning in humans, animals and plants.

Pollution Control Technologist

Pollution control technologists conduct inspections, tests and field investigations to determine the extent of existing air, water or soil contamination and find ways to control and prevent contamination.

Pre-Press Technician

Pre-press technicians use computer software and computer-controlled machines and equipment to generate and combine text, graphics and other visual elements to prepare copy for printing.

Private Trainer/Facilitator

Private trainers and facilitators conduct workshops, seminars, retreats, conference sessions and individual coaching sessions for young people and adults. They also may develop, design and evaluate training programs, curricula and materials.

Property Manager

Property managers oversee the administration, maintenance, operation and improvement of residential, commercial and industrial properties and represent the interests of property owners.

Psychologist

Psychologists assess, diagnose and treat psychological, emotional and behavioural disorders. They also research and apply theories relating to behaviour and mental processes.

Radiological Technologist

Radiological technologists operate x-ray equipment to produce images that are used to diagnose diseases and injuries.

Real Estate Appraiser

Real estate appraisers estimate the value of vacant and improved residential, commercial, industrial, agricultural and other real estate.

Safety Officer

Safety officers, often called safety co-ordinators, advisers, directors or managers, facilitate the development, implementation and maintenance of workplace safety programs.

Sales Representative (Wholesale, Nontechnical)

Wholesale, nontechnical sales representatives sell their organizations' nontechnical goods and services to retail, commercial, industrial and professional clients.

Seismic Observer

Seismic observers operate geophysical recording instruments used in seismic field tests and perform routine maintenance to ensure optimum data quality.

Technical Sales Representative

Technical sales representatives sell technical goods and services to government, commercial and industrial establishments. They may sell commodities such as computers, software and business machines or services such as technical analysis and consulting services.

Technical Writer

Technical writers translate complex technical information into simpler language. They shape and deliver information to meet the needs of a target audience.

Telemarketer

Telemarketers call potential customers to sell goods and services, request donations or conduct surveys.

Toxicologist

Toxicologists investigate the possible harmful effects on living things of chemical agents (e.g. drugs, pesticides, food additives), physical agents (e.g. ionizing and electro-magnetic radiation) and biological agents (e.g. plant and animal toxins).

Urban, Regional and Park Planners

Urban, regional and park planners study the social, economic, political and physical conditions of urban and rural communities, and develop plans for the overall management and protection of specific land parcels or regions.

Visual Merchandiser

Visual merchandisers capture consumers' attention through the placement of merchandise, signage and interior displays in retail stores and shopping malls.

Webmaster

Webmasters are responsible for the design, development, maintenance and success of World Wide Web sites on the Internet and sites internal to their organizations.

Wireline Field Supervisor

Wireline field supervisors direct the work of wireline operators and collect and process data from wireline operations.

Public Administration Industry

Many occupational profiles describe work in federal, provincial, local and aboriginal government departments and agencies. Following are three lists:

1. profiles about work primarily carried out by government employees or agents
2. related profiles about occupations in which many, but not most, people are employed by government departments or agencies
3. indirectly related profiles about other types of work required in government settings.

Government Employees/Agents

Addictions Counsellor

Addictions counsellors help individuals, families and communities identify and deal with addictions through treatment and prevention programs.

Agricultural Commodity Inspector

Agricultural commodity inspectors ensure that agricultural products meet the production, storage and transportation standards set by federal and provincial agriculture departments.

Air Traffic Controller

Air traffic controllers are responsible for the safe and efficient movement of aircraft within an assigned air space and on the ground at airports.

Archivist

Archivists appraise, acquire, arrange, describe, preserve and facilitate the research of records that have ongoing value.

Assessor

Assessors determine the value of land, buildings, businesses, structures and certain types of equipment for property tax purposes.

Audiologist

Audiologists work with children and adults to prevent, assess, diagnose and provide treatment and counselling for hearing and balance disorders.

Bylaw Enforcement Officer

Bylaw enforcement officers are employed by municipalities to enforce local bylaws. In some cases, they may also be appointed as special constables to enforce certain provincial statutes in their municipality or county jurisdiction.

Canadian Forces Personnel - Commissioned Officer

Commissioned officers plan, organize, lead and manage operations and training activities in the Canadian Forces.

Canadian Forces Personnel - Non Commissioned

Non-commissioned members are skilled trades personnel who provide operational and support services in the Canadian Forces.

Conservation Officer

Conservation officers manage resources, visitor services, maintenance and recreation in provincial parks and educate the public about related issues.

Correctional Officer

Correctional officers are responsible for the supervision, control and custody of offenders who have been sentenced or of people awaiting trial in a court of law.

Correctional Services Worker

Correctional services workers supervise adult and young offenders and administer a wide variety of correctional programs and services.

Curator

Curators acquire, document, study, interpret, maintain and provide access to collections of artifacts (products of human hands) and/or specimens (natural history items). In smaller museums, historic sites or galleries, they may be responsible for the overall management of the facility. In larger institutions, curators are usually responsible for specific collections or represent particular academic disciplines.

Customs Inspector

Customs inspectors administer and enforce Canadian laws and regulations related to customs by controlling the movement of people, vehicles and goods in and out of the country.

Firefighter

Firefighters provide pre-hospital care and protect the public from the dangers of fire and other hazards by controlling and extinguishing fires, rescuing people, responding to dangerous goods incidents, maintaining equipment and practicing fire prevention.

Foreign Service Officer

Foreign service officers work in diplomatic offices in countries around the world providing advice to the Canadian government on foreign policy matters, and acting on behalf of Canada abroad.

Immigration Officer

Immigration officers examine immigration applications, visas and passports, and interview people to determine their eligibility for admission, residence or travel in Canada.

Judge

Judges adjudicate civil and family law cases (cases of non-criminal actions) and criminal cases (cases involving Criminal Code offenses and other federal and provincial statutory offenses) and administer justice according to the law.

Judicial Clerk

Judicial clerks provide paralegal support in provincial and federal courts in Alberta.

Land Titles Examiner

Land titles examiners examine land-related documents as they are presented to the land titles office for registration.

Municipal Administrator

Municipal administrators administer the affairs of municipalities including cities, towns, villages, summer villages, municipal districts and specialized municipalities.

Municipal Recycling Truck Driver

Municipal recycling truck drivers collect, sort and transport recyclable waste materials such as glass, plastic, metal and paper.

Municipal Recycling Waste Handler

Municipal recycling waste handlers sort recyclable domestic and commercial waste materials such as glass, plastic, metal and paper.

Museum Technician

Museum technicians assist curators, conservators and other museum staff with functions such as researching, developing, managing and conserving museum collections, setting up exhibits and delivering public programs.

Occupational Health and Safety Inspector

Occupational health and safety inspectors visit places of employment to detect unsafe or unhealthy working conditions, and ensure compliance with laws and regulations governing workplace safety.

Park Warden

Park wardens are responsible for natural and cultural resource management, public safety and law enforcement in Canada's national parks.

Parole/Probation Officer

Parole officers and probation officers help offenders integrate into the community and, at the same time, protect the community by supervising offenders. Parole officers are employed by Correctional Services Canada to manage the conditional release of federal and provincial offenders. Probation officers are employed by Alberta Solicitor General to conduct investigations and prepare predisposition and presentence reports, and supervise offenders in the community.

Police Officer

Police officers help to protect citizens and their property, maintain public peace, prevent and detect crime, apprehend those who break the law, process court requirements, handle traffic problems, enforce regulations, and act as agents of social change within the community to promote safer neighbourhoods.

Public Health Inspector

Public health inspectors prevent disease and promote health by educating people about public health issues and enforcing health legislation.

Refuse Collector

Refuse collectors pick up non-recyclable waste materials from homes, apartment buildings and businesses along designated routes. They may be employed by municipalities or for private waste management companies.

Refuse Truck Driver

Refuse truck drivers pick up non-recyclable waste materials from homes, apartment buildings and businesses along designated routes, and transport them to landfill sites or incinerators for disposal. They may be employed by municipalities or private waste management companies.

Safety Codes Officer

Safety codes officers inspect the construction, installation and maintenance of structures and systems to ensure compliance with relevant codes, standards and regulations. They are concerned with the elements of public safety covered under the Safety Codes Act.

Speech-Language Pathologist

Speech-language pathologists work with children and adults to prevent, assess, diagnose and provide treatment and counselling for speech, language, voice and swallowing disorders.

Urban, Regional and Park Planners

Urban, regional and park planners study the social, economic, political and physical conditions of urban and rural communities, and develop plans for the overall management and protection of specific land parcels or regions.

Wildland Firefighter

Wildland firefighters work in crews to suppress fires in remote locations.

Related Profiles

Many, but not most, people in the following occupations are employed by government departments or agencies.

Aboriginal Liaison

Aboriginal liaisons help build and maintain positive and effective relationships between Aboriginal and non-Aboriginal people who work for or are served by their employers.

Arbitrator

Arbitrators resolve disputes by hearing arguments and evidence, and rendering decisions that may be filed in a court of law and legally enforced.

Assessor

Assessors determine the value of land, buildings, businesses, structures and certain types of equipment for property tax purposes.

Biologist

Biologists conduct research to learn more about living organisms and ecosystems, manage natural resources, and develop new practices and products in such diverse fields as environmental conservation, forensics and pest control.

Career Development Professional

Career development professionals advise, coach, provide information and support people who are planning, seeking and managing their life/work direction.

Child and Youth Care Worker

Child and youth care workers work to improve the physical, emotional, intellectual and social development of vulnerable children and adolescents.

Collection Agent

Collection agents use various strategies to collect money owed on past due accounts including letter writing, telephone calls and credit management.

Community Health Nurse

Community health nurses provide professional nursing services for individuals, families, communities and groups in a variety of settings.

Conservator

Conservators plan, co-ordinate and participate in the preservation and conservation of cultural property (contemporary, historic, prehistoric and enthnographic objects, natural history specimens, archival materials and works of art) and study environmental influences on artifact preservation.

Economist

Economists conduct research, analyze economic information and prepare reports and plans that are used to analyze various economies and economic problems, forecast and anticipate future problems and opportunities and offer ideas for solutions and new initiatives.

Entomologist

Entomologists study the classification, life cycle and habits of insects and related life forms, and plan and implement insect surveys and pest management programs.

Environmental Auditor

Environmental auditors assess the environmental performance of operations in business and industry.

Food Scientist

Food scientists investigate the chemical, microbiological, physical and sensory nature of food, and apply their knowledge in the development, processing, preserving, packaging, distributing and storing of foodstuffs.

Forester

Foresters plan, administer and direct programs related to managing forested lands and related renewable resources.

Geographer

Geographers study the interactions between the distinctive, dynamic features and characteristics of the biosphere and of the human organization of activity within it. They may specialize in particular phenomena or regions at various scales of analysis.

Gerontological Specialist

Gerontological specialists are professionals who specialize in working with older adults.

Hazardous Waste Management Technologist

Hazardous waste management technologists provide information and advice on the packaging, handling and disposal of toxic wastes; conduct inspections and waste audits; investigate environmental incidents; and monitor and control the clean-up of contaminated land, water and air.

Health Service Administrator

Health service administrators plan, organize, direct, co-ordinate and evaluate health programs and services that promote health and provide care to individuals, groups and communities.

Historian

Historians research, analyze, interpret, synthesize and document human, cultural and technological history.

Home Economist

Home economists enhance people's quality of life by providing advisory, counselling, management, promotion and education services related to money management, consumer education, foods and nutrition, home design, clothing and textiles, and family function.

Interpretive Naturalist

Interpretive naturalists explain the natural and scientific features of parks, botanical gardens and wilderness areas to visitors.

Kinesiologist

Kinesiologists study the factors that influence human movement and look for ways to improve the efficiency and performance of the human body at work, in sport and in daily life.

Legal and Realtime Reporter

Legal and realtime reporters write machine shorthand at a minimum speed of 225 words per minute to capture every word spoken in a variety of settings. Computer technology instantly translates shorthand notes into English text that can be displayed or printed.

Librarian

Librarians assess the informational, educational, cultural and recreational needs of the community they serve, find resources to meet those needs, and provide access to and manage resources.

Library Clerk

Library clerks help librarians and library technicians by serving library users and performing many of the clerical tasks involved in library work.

Library Technician

Library technicians support and assist librarians by performing technical tasks involved in library work such as collection management, cataloguing and document delivery. They also provide reference services and may manage small corporate, school or public libraries.

Mechanical Engineer

Mechanical engineers research, design and evaluate machines, devices, equipment, systems and processes, and plan and oversee their development, installation, operation and maintenance.

Meteorologist

Meteorologists study the physics, chemistry and dynamics of the atmosphere and its interaction with land and water surfaces, weather, climate, climate change and their effect on people's health and safety, the economy and the earth's ecosystems.

Paralegal

Paralegals do independent legal work under the general supervision of lawyers. They perform routine legal and administrative functions and assist lawyers with more complex matters.

Real Estate Appraiser

Real estate appraisers estimate the value of vacant and improved residential, commercial, industrial, agricultural and other real estate.

Recreation and Sport Administrator

Recreation and sport administrators plan, organize and direct sport and recreation programs and services in accordance with policies set by management, owners, boards of directors or executive committees.

Recreation Co-ordinator/Supervisor

Recreation co-ordinators administer and oversee recreation programs and leisure services.

Social Worker

Social workers help individuals, families, groups, communities and organizations develop the skills and resources they need to enhance their social functioning and social environments.

Soil Scientist

Soil scientists study the composition, distribution, development and behaviour of soils and the interaction of soils with soil organisms, animals and plants.

Volunteer Manager

Volunteer managers plan volunteer involvement in organizations and co-ordinate volunteer programs in a variety of settings.

Water and Wastewater Treatment Plant Operator

Water and wastewater treatment plant operators monitor and operate control systems and equipment in water purification and treatment plants, and wastewater, sewage treatment and liquid waste plants.

Indirectly Related Profiles

People in the following occupations may be employed in government departments or agencies.

Accountant

Accounting Technician

Administrative Assistant

Biological Technician

Building Operator

Call Centre Agent

Cashier

Civil Engineer

Computer Programmer
Computer Service Technician
Demographer
Ecologist
Economist
Environmental Engineer
Ergonomist
Forester
Geomatics/Surveying Engineer
Heavy Equipment Operator
Human Resources Professional
Information Systems Consultant
Internal Auditor
Landscape Architect
Lawyer
Legal Secretary
Mathematician
Mediator
Occupational Health Nurse
Occupational Hygienist
Paralegal
Power Engineer
Property Manager
Public Relations Representative
Purchasing Agent
Receptionist
Safety Officer
Security Guard
Shipper and Receiver
Software Engineer
Systems Auditor
Systems Security Analyst
Translator
Warehousing Professionals
Web Technician
Webmaster
Word Processing Operator

Repair, Maintenance, Personal and Other Services Industry

Many occupational profiles describe occupations in which people repair and maintain vehicles, equipment or machinery, provide personal services or work for not-for-profit organizations. Following are six lists of profiles about occupations involved with:

1. repairing and maintaining motor vehicles (e.g. cars, trucks, motorcycles) and related equipment (e.g. trailers)
2. repairing and maintaining personal and household goods (e.g. home and garden equipment, appliances, televisions, furniture, footwear, watches, jewellery, musical instruments)
3. repairing and maintaining electronic equipment (other than televisions, radios and related household equipment)
4. repairing and maintaining other commercial and industrial machinery and equipment
5. providing personal care, laundry or other personal services (e.g. funeral, pet care and photo finishing services)
6. working in religious, civic, professional and other organizations.

Motor Vehicles

Auto Body Technician

Auto body technicians repair, replace and refinish damaged motor vehicle structures and body parts, and interior and exterior finishes.

Auto Detailer

Auto detailers clean and refurbish the interiors and exteriors of automobiles.

Automobile Accessories Installer

Automobile accessories installers install accessories such as heaters, audio systems, security systems, lights, antennas, upholstery and truck box liners.

Automotive Service Technician

Automotive service technicians perform preventative maintenance, diagnose faulty operations and repair automotive vehicles and light trucks.

Heavy Equipment Technician

Heavy equipment technicians maintain, repair and overhaul towed and self-propelled heavy vehicles and industrial heavy equipment and commercial transport devices connected to or moved by a power unit.

Motorcycle Mechanic

Motorcycle mechanics assemble, maintain, repair and restore motorcycles and other multi-wheeled lightweight all-terrain vehicles that do not have lateral seating and are equipped with a handle bar on which the vehicle's controls are located.

Parts Technician

Parts technicians dispense parts and manage inventories of automotive, heavy duty, farm implement, industrial, recreational vehicle, jobbers, plumbing, electrical or other parts.

Recreation Vehicle Service Technician

Recreation vehicle service technicians install, repair and maintain interior and exterior components on motor homes, travel trailers, fifth wheel trailers, truck campers, tent trailers and van conversions.

Transport Refrigeration Technician

Transport refrigeration technicians install, repair and maintain equipment that supplies and contains conditioned air in mobile units which transport perishable goods such as food and medical supplies.

Personal/Household Goods

Appliance Service Technician

Appliance service technicians install, service and repair household and commercial appliances such as ranges, ovens, clothes washers, dryers, freezers, refrigerators, microwave ovens, dishwashers, waste disposers and waste compactors.

Electronic Technician

Electronic technicians service and repair household and business electronic equipment such as radios and televisions, compact disc players and personal computer systems.

Jeweller

Jewellers design, make, repair and appraise fine, fashion and costume jewellery.

Locksmith

Locksmiths install, adjust and repair locks, make keys and change lock combinations. They work on residential, automotive, commercial and institutional locksets and door hardware. Locksmiths may also install and maintain more sophisticated security systems.

Musical Instrument Repair Technician

Musical instrument repair technicians, including piano technicians, pipe organ repairers, band instrument repair technicians and violin repairers, maintain and repair musical instruments.

Optical Technician

Optical technicians manufacture, assemble and repair eyeglasses according to prescriptions from optometrists or ophthalmologists.

Outdoor Power Equipment Technician

Outdoor power equipment technicians repair, service and maintain small gasoline and diesel powered marine, power, recreational and turf equipment used by industry and homeowners.

Upholsterer

Upholsterers cover furniture such as sofas and chairs with fabric, leather and other upholstery materials.

Watch Repairer

Watch repairers clean, oil, adjust and repair all types of mechanical and electronic clocks and watches.

Electronic Equipment

Automated Systems Technologist

Automated systems technologists analyze, implement, maintain and design electro-mechanical (automated) systems. These systems often include mechanical components, sensors, actuators and control systems and may include stationary or mobile robots.

Avionics Technologist

Avionics technologists modify, install, maintain and repair electronic equipment used in aviation.

Biomedical Engineering Technologist

Biomedical engineering technologists maintain and repair the biomedical equipment that physicians, nurses and other medical personnel use to monitor, diagnose and treat medical conditions.

Computer Service Technician

Computer service technicians install, service and configure computer systems and networks including desktop computers, servers and peripherals such as printers, disk drives and CD-ROM drives.

Electronics Engineering Technologist

Electronics engineering technologists apply the practical and theoretical principles of electronics to the development of electronic-based circuits, and the operation and servicing of electronic equipment and systems.

Office Equipment Technician

Office equipment technicians repair and maintain business machines such as photocopiers, facsimile (fax) machines and laser printers.

Other Machinery/Equipment

Agricultural Equipment Technician

Agricultural equipment technicians repair, overhaul and maintain agricultural equipment such as tractors, tillage, seeding and harvesting equipment.

Aircraft Maintenance Engineer

Aircraft maintenance engineers are licensed by Transport Canada to inspect and certify that work done on an aircraft complies with written airworthiness standards. They may specialize in different types of aircraft such as turbo jets, helicopters or propeller-driven airplanes.

Electrical Engineering Technologist

Electrical engineering technologists apply their knowledge and understanding of electrical theory in business, engineering and industry settings.

Electrical Motor Systems Technician

Electrical motor systems technicians test, rebuild and repair electric motors, generators, transformers, controllers and related electrical and mechanical equipment used in commercial, industrial and institutional establishments.

Elevator Constructor

Elevator constructors install, modify, service and repair electric and hydraulic elevators, personnel and man-hoists, moving walkways, stagelifts, escalators and related equipment.

Instrument Technician

Instrument technicians install, maintain and repair the measuring and control instruments used in industrial and commercial processing.

Millwright

Millwrights install, maintain, repair and troubleshoot stationary industrial machinery and mechanical equipment in factories, production plants and recreational facilities.

Railway Car Mechanic

Railway car mechanics inspect, test, maintain, repair and fabricate railway passenger and freight car equipment.

Refrigeration and Air Conditioning Mechanic

Refrigeration and air conditioning mechanics install, maintain, repair and overhaul industrial, commercial and residential refrigeration and air conditioning systems and their component parts.

Sawfiler

Sawfilers repair, set and sharpen blades for band, chain, hand, circular and other types of saws.

Vending Machine Repairer

Vending machine repairers install, service and repair coin-operated vending machines that dispense food, beverages and other products.

Personal Care, Laundry and Other Personal Services

Cosmetician

Cosmeticians demonstrate and sell cosmetic products and advise customers about their use.

Dietitian

Dietitians develop, implement and evaluate food and nutrition strategies to promote health and treat disease; manage food service systems; and develop and deliver related programs and policies.

Domestic Housekeeper

Domestic housekeepers provide household management and personal services for family members in private homes.

Dry Cleaning and Laundry Workers

Dry cleaning workers clean clothes, drapes and other items using dry and wet cleaning techniques. Laundry workers clean clothes and linens that can be washed in water.

Electrologist

Electrologists use a needle-type epilator to permanently remove unwanted hair.

Embalmer

Embalmers prepare the remains of people who have died for public visitation and burial.

Esthetician

Estheticians provide facial and body treatments designed to enhance the physical appearance of their clients.

Food and Nutrition Manager

Food and nutrition managers provide nutrition care and supervise food service operations in health care settings and commercial food service establishments.

Funeral Attendant

Funeral attendants perform a variety of duties in connection with preparing for and conducting funeral services, and maintaining funeral home facilities and equipment.

Funeral Director

Funeral directors take charge of caring for the remains of people who have died, help families plan funeral services, and co-ordinate and manage arrangements for services.

Hairstylist

Hairstylists cut and style hair to suit the client's face and lifestyle.

Massage Therapist

Massage therapists assess the soft tissue and joints of the body and administer massage treatments to relieve pain and symptoms of stress, or to develop, maintain, rehabilitate or augment physical function.

Nanny

Nannies care for children in private homes, providing for their social, emotional, intellectual and physical development.

Personal Care Attendant

Personal care attendants provide personal assistance and support services for elderly, disabled, acute or chronically ill people who require short term assistance or ongoing support.

Pet Groomer

Pet groomers shampoo, clip and groom dogs, cats and other pets to improve and maintain their

hygiene, comfort and appearance.

Photographic Processing Technician

Photographic processing technicians develop images and make prints and slides. They also may enlarge and retouch photographs or use computers to manipulate images.

Psychiatric Aide

Psychiatric aides work under the direct supervision of health care professionals caring for people who are mentally ill, developmentally handicapped, cognitively impaired or brain injured.

Religious, Civic, Professional and Other Organizations

Fundraiser

Fundraisers plan and organize annual fundraising programs, special gift appeals and capital campaigns to raise money for particular charitable groups or causes (e.g. community agencies, arts organizations, educational institutions, hospitals).

Religious Leader

Religious leaders, including ministers, rabbis, imam, priests, pastors, chaplains, bishops, curates and leaders in other religious communities, conduct religious services and provide inspirational, philosophical and religious education and guidance to members of their communities.

Volunteer Manager

Volunteer managers plan volunteer involvement in organizations and co-ordinate volunteer programs in a variety of settings.

Retail Trade Industry

Many occupational profiles describe work involved in selling merchandise and offering after-sales services such as installation or repair. Following are three lists:

1. profiles about occupations involved in selling merchandise and offering related services
2. other profiles related to retail trade
3. indirectly related profiles about other types of work required in the retail trade industry.

Selling Merchandise and Related Services

Appliance Service Technician

Appliance service technicians install, service and repair household and commercial appliances such as ranges, ovens, clothes washers, dryers, freezers, refrigerators, microwave ovens, dishwashers, waste disposers and waste compactors.

Auctioneer

Auctioneers arrange auction sales, evaluate goods and property, conduct bidding and sell items to the highest bidders.

Auto Body Technician

Auto body technicians repair, replace and refinish damaged motor vehicle structures and body parts, and interior and exterior finishes.

Automotive Service Technician

Automotive service technicians perform preventative maintenance, diagnose faulty operations and repair automotive vehicles and light trucks.

Baker

Bakers prepare and bake breads, cakes, cookies, pastries, pies and other baked goods.

Call Centre Agent

Call centre agents respond to questions and inquiries, resolve customer problems and provide information about company policies, products and services over the phone, by fax and via the Internet.

Carpet and Upholstery Cleaner

Carpet and upholstery cleaners operate cleaning machines to clean carpets, rugs and upholstered furniture at customers' premises or in cleaning plants.

Cashier

Cashiers total bills, accept payments, make change, provide information, fill out forms and provide receipts for goods and services in supermarkets, department stores, theatres, restaurants and other establishments.

Computer Service Technician

Computer service technicians install, service and configure computer systems and networks including desktop computers, servers and peripherals such as printers, disk drives and CD-ROM drives.

Direct Distributor

Direct distributors demonstrate and sell products such as books, candles, clothing, cookware, cosmetics, craft supplies, gourmet food, home care items, toys and vitamins.

Fashion Designer

Fashion designers create new styles of clothing and accessories such as jewellery, belts, gloves and hats.

Floral Designer

Floral designers create floral arrangements and purchase, sell and care for flowers and potted plants in retail flower shops.

Gemmologist

Gemmologists apply their knowledge of natural gemstones, synthetics and imitations to identify and grade coloured stones and diamonds.

Interior Decorator

Interior decorators assist clients in co-ordinating the decorative aspects of interior spaces.

Jeweller

Jewellers design, make, repair and appraise fine, fashion and costume jewellery.

Meat Cutter

Meat cutters prepare standard cuts of meat, poultry and fish, and products such as sausage in processing plants or retail food establishments.

Motorcycle Mechanic

Motorcycle mechanics assemble, maintain, repair and restore motorcycles and other multi-wheeled lightweight all-terrain vehicles that do not have lateral seating and are equipped with a handle bar on which the vehicle's controls are located.

Musical Instrument Repair Technician

Musical instrument repair technicians, including piano technicians, pipe organ repairers, band instrument repair technicians and violin repairers, maintain and repair musical instruments.

Optical Technician

Optical technicians manufacture, assemble and repair eyeglasses according to prescriptions from optometrists or ophthalmologists.

Optician

Opticians, sometimes called ophthalmic dispensers, fit and adapt eye glasses, contact lenses, low vision aids and other optical appliances according to prescriptions.

Parts Technician

Parts technicians dispense parts and manage inventories of automotive, heavy duty, farm implement, industrial, recreational vehicle, jobbers, plumbing, electrical or other parts.

Pharmacist

Pharmacists provide services and programs that are designed to promote health and well-being, and treat disease and other disorders through drug therapy, wellness promotion and disease state management.

Pharmacy Assistant/Technician

Pharmacy assistants and technicians assist pharmacists by compounding, packaging and labelling pharmaceutical products, and maintaining prescription records and inventories of medications and pharmaceutical products.

Retail Salesperson

Retail salespersons sell or rent goods and services to customers in stores and other retail businesses.

Retail Shelf Stocker

Retail shelf stockers unpack and price merchandise and stock shelves and displays. They may also pack customers' purchases.

Retail Store Manager

Retail store managers plan, organize, direct and control the operations of stores that sell merchandise and services to the public. They may be employees or self-employed.

Telemarketer

Telemarketers call potential customers to sell goods and services, request donations or conduct surveys.

Upholsterer

Upholsterers cover furniture such as sofas and chairs with fabric, leather and other upholstery materials.

Vending Machine Route Worker

Vending machine route workers fill, clean and maintain vending machines that dispense change or products in places such as offices, schools and hotels.

Visual Merchandiser

Visual merchandisers capture consumers' attention through the placement of merchandise, signage and interior displays in retail stores and shopping malls.

Watch Repairer

Watch repairers clean, oil, adjust and repair all types of mechanical and electronic clocks and watches.

Related Profiles

Banquet Manager

Banquet managers plan, organize and direct the service of food and beverages for banquets and other social functions.

Cabinetmaker

Cabinetmakers build and repair custom or production-type fixtures and furniture made of wood or wood substitutes.

Caterer

Caterers plan, organize and direct the preparation and service of food and beverages for banquets and other social functions.

Cosmetician

Cosmeticians demonstrate and sell cosmetic products and advise customers about their use.

Electrologist

Electrologists use a needle-type epilator to permanently remove unwanted hair.

Electronic Technician

Electronic technicians service and repair household and business electronic equipment such as radios and televisions, compact disc players and personal computer systems.

Esthetician

Estheticians provide facial and body treatments designed to enhance the physical appearance of their clients.

Exhibit Designer

Exhibit designers work with others to research, plan, design and oversee the fabrication and

installation of exhibits and displays.

Financial Customer Service Representative

Financial customer service representatives promote their financial institution's products and services, open and close accounts, keep records of transactions, accept payments, and receive and pay out money.

Floorcovering Installer

Floorcovering installers install, repair and replace resilient floorcovering materials such as underlay, carpet, sheet goods (e.g. vinyl) and resilient tile in commercial, residential and industrial buildings.

Food and Beverage Server

Food and beverage servers accept and serve customers' food and beverage orders in restaurants and bars.

Food Service Helper

Food service helpers clear tables and assist workers who serve food and beverages in restaurants and other food service establishments.

Furniture Mover

Furniture movers move furniture, office supplies and equipment to and from homes, apartments, offices and storage establishments.

Glazier

Glaziers cut and install glass and aluminum systems for commercial, residential and automotive applications.

Hairstylist

Hairstylists cut and style hair to suit the client's face and lifestyle.

Herbalist

Herbalists advise people about the use of herbs and dietary supplements to maintain good health and relieve symptoms related to conditions such as arthritis, rheumatism, asthma, skin disorders or stomach ailments.

Interior Designer

Interior designers create and enhance interior spaces to improve quality of life, increase productivity and protect public health, safety and welfare.

Messenger/Courier

Messengers sort, collect and deliver letters, telegrams, packages or messages; run errands; distribute office supplies and perform similar routine duties.

Nail Technician

Nail technicians clean, shape, extend and polish clients' fingernails and toenails.

Office Equipment Technician

Office equipment technicians repair and maintain business machines such as photocopiers, facsimile (fax) machines and laser printers.

Outdoor Power Equipment Technician

Outdoor power equipment technicians repair, service and maintain small gasoline and diesel powered marine, power, recreational and turf equipment used by industry and homeowners.

Photographer

Photographers use their skills and artistic talent to capture people, products, events, fashion,

landscapes, legal evidence and other subjects on film or silicon-based media.

Photographic Processing Technician

Photographic processing technicians develop images and make prints and slides. They also may enlarge and retouch photographs or use computers to manipulate images.

Postal/Wicket Clerk

Postal/wicket clerks provide postal services for customers and record transactions at sales counters and postal wickets.

Private Investigator

Private investigators gather information and conduct surveillance to secure evidence relating to a wide range of private, corporate and legal interests.

Restaurant Manager

Restaurant managers plan, organize, direct and control the operation of establishments in which food and beverages are served.

Security Alarm Installer

Security alarm installers install and maintain electronic security alarm systems for homes, businesses and industrial properties.

Shipper and Receiver

Shippers and receivers wrap, pack and unpack, store, ship, receive and record the movement of parts, supplies, materials, equipment and stock to and from retailers, wholesalers, manufacturing companies, and other commercial and industrial organizations.

Travel Consultant

Travel consultants, on behalf of travel suppliers, represent, advertise, promote and sell a wide variety of travel services to the public.

Warehousing Professionals

Warehousing professionals are responsible for general warehousing activities such as shipping and receiving and planning and managing the flow of goods into, within and from organizations.

Indirectly Related Profiles

People in the following occupations may work for retail trade establishments.

Accountant

Accounting Technician

Administrative Assistant

Building Operator

Collection Agent

Computer and Network Operator

Computer Engineer

Computer Programmer

Cook

Custodian

Customer Support Analyst

Customs Broker

Demographer

Dispatcher
Food Service Supervisor
Graphic Designer
Human Resources Professional
Illustrator
Information Systems Consultant
Internal Auditor
Kitchen Helper and Food Assembler
Lawyer
Management Consultant
Marketing Manager
Operations Manager
Power Engineer
Pre-Press Technician
Private Trainer/Facilitator
Property Manager
Public Relations Representative
Purchasing Agent
Receptionist
Sales Representative (Wholesale, Nontechnical)
Security Guard
Software Engineer
Technical Sales Representative
Truck Driver
Web Designer
Webmaster
Word Processing Operator

Transportation and Warehousing Industry

A number of occupational profiles describe work associated with transporting passengers and goods, and/or storing goods. Following are five lists:

1. profiles about transporting passengers or goods via air, rail, water, truck or public transit
2. profiles about warehousing and pipeline transportation
3. profiles about postal/courier services
4. profiles about other occupations related to transportation and warehousing
5. indirectly related profiles about other types of work performed in the transportation and warehousing industry.

Transporting Passengers and/or Goods

Aerospace Engineer

Aerospace engineers research, design, develop, test, manufacture and maintain aerospace vehicles and systems such as commercial and military aircraft, missiles, spacecraft and related aerospace equipment.

Air Traffic Controller

Air traffic controllers are responsible for the safe and efficient movement of aircraft within an assigned air space and on the ground at airports.

Aircraft Maintenance Engineer

Aircraft maintenance engineers are licensed by Transport Canada to inspect and certify that work done on an aircraft complies with written airworthiness standards. They may specialize in different types of aircraft such as turbo jets, helicopters or propeller-driven airplanes.

Airline Pilot

Airline pilots fly aircraft transporting passengers, cargo and mail. With the exception of some small aircraft, a captain and first officer work together on commercial flights.

Airline Ticket Agent

Airline ticket agents make reservations and sell tickets to passengers travelling by air.

Avionics Technologist

Avionics technologists modify, install, maintain and repair electronic equipment used in aviation.

Bus Driver

Bus drivers transport passengers from place to place along established routes. They may operate transit buses, motor coaches or school buses.

Bus Line Ticket Agent

Bus line ticket agents provide information and sell tickets to passengers travelling by motor coach.

Chauffeur

Chauffeurs drive limousines and large sedans to transport passengers, ranging from corporate executives to children, from place to place.

Dispatcher

Dispatchers receive requests for service or emergency assistance and relay information to field personnel.

Flight Attendant

Flight attendants are responsible for the on-board safety of airline passengers and crew members. They assist passengers and other crew members in emergency situations and offer a variety of

services to passengers to make a trip as pleasant as possible.

Flight Service Specialist

Flight service specialists provide information for pilots that is relevant to the safe completion of their flights.

Furniture Mover

Furniture movers move furniture, office supplies and equipment to and from homes, apartments, offices and storage establishments.

Heavy Equipment Technician

Heavy equipment technicians maintain, repair and overhaul towed and self-propelled heavy vehicles and industrial heavy equipment and commercial transport devices connected to or moved by a power unit.

Helicopter Pilot

Helicopter pilots transport passengers and freight by helicopter, an aircraft which can move in any direction at varying speeds or remain stationary in the air.

Municipal Recycling Truck Driver

Municipal recycling truck drivers collect, sort and transport recyclable waste materials such as glass, plastic, metal and paper.

Railway Car Mechanic

Railway car mechanics inspect, test, maintain, repair and fabricate railway passenger and freight car equipment.

Refuse Truck Driver

Refuse truck drivers pick up non-recyclable waste materials from homes, apartment buildings and businesses along designated routes, and transport them to landfill sites or incinerators for disposal. They may be employed by municipalities or private waste management companies.

Station Attendant/Ramp Service Agent

Station attendants are employed at airports to operate ramp servicing vehicles and equipment, handle baggage and perform other duties on the ramp and in cargo warehouses.

Taxi Driver

Taxi drivers operate automobiles and vans to transport passengers from one place to another.

Traffic Manager

Traffic managers direct and co-ordinate the transportation of incoming materials from suppliers or raw material sources and outgoing products to distribution houses and customers.

Transport Refrigeration Technician

Transport refrigeration technicians install, repair and maintain equipment that supplies and contains conditioned air in mobile units which transport perishable goods such as food and medical supplies.

Truck Driver

Truck drivers operate gasoline or diesel-powered trucks, tractor-trailers and similar vehicles to transport goods and materials over local routes or long distances.

Vending Machine Route Worker

Vending machine route workers fill, clean and maintain vending machines that dispense change or products in places such as offices, schools and hotels.

Warehousing and Pipeline Transportation

Gas Pipeline Operators and Maintenance Workers

Gas pipeline operators and maintenance workers monitor the day to day operations of meter and compressor stations essential to the distribution and smooth flow of gas through pipelines.

Oil Pipeline Operators and Maintenance Workers

Oil pipeline operators and maintenance workers monitor and conduct the day to day operations of oil pipelines and associated facilities.

Warehousing Professionals

Warehousing professionals are responsible for general warehousing activities such as shipping and receiving and planning and managing the flow of goods into, within and from organizations.

Postal and Courier Services

Letter Carrier

Letter carriers are employees of Canada Post who sort and deliver mail for established routes, record delivery of registered mail and collect payments for cash-on-delivery (COD) parcels.

Mail Sorter

Mail sorters collect, process and sort incoming and outgoing mail, parcels and oversized mail for dispatch and delivery.

Messenger/Courier

Messengers sort, collect and deliver letters, telegrams, packages or messages; run errands; distribute office supplies and perform similar routine duties.

Postal/Wicket Clerk

Postal/wicket clerks provide postal services for customers and record transactions at sales counters and postal wickets.

Related Profiles

Canadian Forces Personnel - Commissioned Officer

Commissioned officers plan, organize, lead and manage operations and training activities in the Canadian Forces.

Canadian Forces Personnel - Non Commissioned

Non-commissioned members are skilled trades personnel who provide operational and support services in the Canadian Forces.

College, Technical or Vocational Instructor

College, technical and vocational instructors provide instruction to adults in a wide variety of subject areas including vocational, technical, business or services training, trades, academic upgrading and university transfer courses.

Emergency Medical Responder

Emergency medical responders (EMRs) provide pre-hospital emergency medical care and transportation for the sick and injured.

Emergency Medical Technician - Ambulance

Emergency medical technicians - ambulance (EMT-As) provide pre-hospital emergency medical care at the basic life support level as well as transportation for the sick and injured.

Emergency Medical Technologist - Paramedic

Emergency medical technologist - paramedics (EMT-Ps) provide pre-hospital emergency medical care at the advanced life support level as well as transportation for the sick and injured.

Field Production Operator

Field production operators are responsible for the initial separation processes or the special treatment required to ensure that impurities such as water, gas and sediments are removed from oil and gas in the field. Once separated, the oil or gas is transported by pipeline to refineries, gas plants or markets.

Gas Plant Operator

Gas plant operators control automated processes which convert raw natural gas into forms that can be used by consumers.

Heavy Equipment Operator

Heavy equipment operators use a variety of mobile machines and attachments to excavate, grade and landscape earth or move workers, materials and equipment.

Hotel and Motel Desk Clerk

Desk clerks are employed in hotels and motels, and are often the first people to greet incoming guests.

Operations Research Analyst

Operations research analysts use mathematical modelling and information technology to develop decision support systems for decision-makers in public and private organizations.

Refinery/Upgrader Process Operator

Refinery/upgrader process operators are responsible for the day to day operations of oil refineries and upgraders.

Shipper and Receiver

Shippers and receivers wrap, pack and unpack, store, ship, receive and record the movement of parts, supplies, materials, equipment and stock to and from retailers, wholesalers, manufacturing companies, and other commercial and industrial organizations.

Indirectly Related Profiles

People in the following occupations may work in the transportation and warehousing industry.

Accountant

Accounting Technician

Administrative Assistant

Arbitrator

Auto Detailer

Automotive Service Technician

Call Centre Agent

Collection Agent

Computer and Network Operator

Computer Programmer

Concrete Finisher

Cook

Custodian

Customer Support Analyst

Customs Broker

Demographer
Ecologist
Economist
Firefighter
Human Resources Professional
Internal Auditor
Interpreter
Lawyer
Machinist
Management Consultant
Marketing Manager
Mediator
Occupational Hygienist
Operations Manager
Parts Technician
Police Officer
Power Engineer
Private Trainer/Facilitator
Property Manager
Public Relations Representative
Purchasing Agent
Real Estate Agent
Receptionist
Safety Officer
Sales Representative (Wholesale, Nontechnical)
Security Guard
Statistician
Technical Sales Representative
Web Designer
Webmaster
Word Processing Operator

Utilities Industry

A number of occupational profiles describe work in power, water and natural gas utility companies. Following are three lists:

1. profiles about occupations involved in the generation, transmission and distribution of electric power, the distribution of natural gas or the operation of water and sewage systems
2. profiles about other occupations in which many people are employed by power, water or gas utilities
3. indirectly related profiles about other types of work required in power, water and gas utility companies.

Power, Water and Gas Utilities

Gas Utility Operator

Gas utility operators install and service gas utility pipeline systems that transport natural gas from its source to points of use such as building meter sets.

Power Lineman

Power linemen construct, maintain and repair overhead and underground electrical power transmission and distribution systems.

Power System Electrician

Power system electricians install, maintain and repair electrical power generation, transmission and distribution systems and equipment.

Utility Clerk

Utility clerks record information, receive payments, process forms, answer enquiries and handle complaints from the public regarding utility company services and policies.

Water and Wastewater Treatment Plant Operator

Water and wastewater treatment plant operators monitor and operate control systems and equipment in water purification and treatment plants, and wastewater, sewage treatment and liquid waste plants.

Related Profiles

Call Centre Agent

Call centre agents respond to questions and inquiries, resolve customer problems and provide information about company policies, products and services over the phone, by fax and via the Internet.

Dispatcher

Dispatchers receive requests for service or emergency assistance and relay information to field personnel.

Electrician

Electricians install, alter, repair and maintain electrical systems designed to provide heat, light, power, control, signals or fire alarms for all types of buildings, structures and premises.

Environmental Auditor

Environmental auditors assess the environmental performance of operations in business and industry.

Environmental Engineer

Environmental engineers design systems, processes and equipment for air, water and soil pollution

assessment, prevention and control, solid and hazardous waste management, and the remediation of contaminated sites.

Gasfitter

Gasfitters size, install, test, adjust and service natural gas and propane equipment ranging from residential furnaces to industrial boilers.

Heavy Equipment Operator

Heavy equipment operators use a variety of mobile machines and attachments to excavate, grade and landscape earth or move workers, materials and equipment.

Instrument Technician

Instrument technicians install, maintain and repair the measuring and control instruments used in industrial and commercial processing.

Pollution Control Technologist

Pollution control technologists conduct inspections, tests and field investigations to determine the extent of existing air, water or soil contamination and find ways to control and prevent contamination.

Power Engineer

Power engineers supervise, operate and maintain machinery and boilers that provide power, heat, refrigeration and other utility services to heavy industry and large building complexes.

Indirectly Related Profiles

People in the following occupations may work for power, water or gas utilities.

Aboriginal Liaison

Accountant

Accounting Technician

Administrative Assistant

Collection Agent

Computer and Network Operator

Computer Programmer

Custodian

Ecologist

Heavy Equipment Technician

Human Resources Professional

Information Systems Consultant

Internal Auditor

Operations Manager

Public Relations Representative

Purchasing Agent

Safety Officer

Security Guard

Software Engineer

Warehousing Professionals

Web Technician

Webmaster
Word Processing Operator

Wholesale Trade Industry

A number of occupational profiles describe work in the wholesale trade industry. Following are three lists:

1. profiles about occupations directly involved in the sale and distribution of wholesale goods
2. profiles about related occupations in which many people work in the wholesale industry
3. indirectly related profiles about other types of work performed in wholesale distribution establishments.

Wholesale Sales and Distribution

Auctioneer

Auctioneers arrange auction sales, evaluate goods and property, conduct bidding and sell items to the highest bidders.

Direct Distributor

Direct distributors demonstrate and sell products such as books, candles, clothing, cookware, cosmetics, craft supplies, gourmet food, home care items, toys and vitamins.

Sales Representative (Wholesale, Nontechnical)

Wholesale, nontechnical sales representatives sell their organizations' nontechnical goods and services to retail, commercial, industrial and professional clients.

Shipper and Receiver

Shippers and receivers wrap, pack and unpack, store, ship, receive and record the movement of parts, supplies, materials, equipment and stock to and from retailers, wholesalers, manufacturing companies, and other commercial and industrial organizations.

Technical Sales Representative

Technical sales representatives sell technical goods and services to government, commercial and industrial establishments. They may sell commodities such as computers, software and business machines or services such as technical analysis and consulting services.

Truck Driver

Truck drivers operate gasoline or diesel-powered trucks, tractor-trailers and similar vehicles to transport goods and materials over local routes or long distances.

Warehousing Professionals

Warehousing professionals are responsible for general warehousing activities such as shipping and receiving and planning and managing the flow of goods into, within and from organizations.

Related Profiles

Many people employed in the following occupations work in the wholesale trade industry.

Agricultural Equipment Technician

Agricultural equipment technicians repair, overhaul and maintain agricultural equipment such as tractors, tillage, seeding and harvesting equipment.

Customs Broker

Customs brokers are employed by importers and exporters to clear goods through customs and ensure their timely delivery. They may also be involved in logistics or supply chain management.

Furniture Mover

Furniture movers move furniture, office supplies and equipment to and from homes, apartments,

offices and storage establishments.

Gemmologist

Gemmologists apply their knowledge of natural gemstones, synthetics and imitations to identify and grade coloured stones and diamonds.

Heavy Equipment Technician

Heavy equipment technicians maintain, repair and overhaul towed and self-propelled heavy vehicles and industrial heavy equipment and commercial transport devices connected to or moved by a power unit.

Marketing Manager

Marketing managers plan, organize, co-ordinate and control the activities of organizations or departments within organizations involved in marketing products or services.

Meat Cutter

Meat cutters prepare standard cuts of meat, poultry and fish, and products such as sausage in processing plants or retail food establishments.

Parts Technician

Parts technicians dispense parts and manage inventories of automotive, heavy duty, farm implement, industrial, recreational vehicle, jobbers, plumbing, electrical or other parts.

Traffic Manager

Traffic managers direct and co-ordinate the transportation of incoming materials from suppliers or raw material sources and outgoing products to distribution houses and customers.

Vending Machine Repairer

Vending machine repairers install, service and repair coin-operated vending machines that dispense food, beverages and other products.

Indirectly Related Profiles

People in the following occupations may work for wholesalers and distributors.

Accountant

Accounting Technician

Administrative Assistant

Collection Agent

Computer and Network Operator

Computer Programmer

Custodian

Dispatcher

Human Resources Professional

Information Systems Consultant

Internal Auditor

Security Guard

Software Engineer

Systems Auditor

Systems Security Analyst

Webmaster

E. Occupational Profile Reports by Title, National Occupational Classification (NOC) Number, Primary Interest, Industry Cluster and Production Date

February 14, 2006

This section contains a code key and five reports.

The OCCinfo Reports Code Key is in front of the reports. It contains definitions of the code levels for interests, education, growth rate and lifting.

The five reports are:

1. Occupational Profiles by Title
2. Occupational Profiles by NOC Number
3. Occupational Profiles by Primary Interest
4. Occupational Profiles by Industry Cluster
5. Occupational Profiles by Production Date

Each report shows the NOC number, interest codes, production date, education level, outlook level and lifting level for every occupational profile.

OCCinfo Reports Code Key

February 14, 2006

OCCinfo reports include the following information about each Alberta occupational profile:

- National Occupational Classification (NOC) number
- production date (the month and year the whole profile was last updated)
- letter codes for Canadian Work Preference Inventory (CWPI) interests associated with the NOC occupational group
- a code number for the **minimum** level of education/training required to enter the occupation
- a code number for the rate at which the occupation is growing
- a code number for how much weight people in the occupation are routinely required to lift.

Interest Codes[1]

D Directive persons like to take charge and control situations. They like to take responsibility for projects that require planning, making decisions and co-ordinating the work of others. They are able to give direction and instructions easily. They enjoy organizing their own activities. They see themselves as independent and self-directing.

I Innovative persons like to explore things in depth and arrive at solutions to problems by experimenting. They are interested in initiating and creating different ways to solve questions and present information. They enjoy scientific subjects. Innovative persons prefer to be challenged with new and unexpected experiences. They adjust to change easily.

M Methodical persons like to have clear rules and organized methods to guide their work. They prefer working under the direction or supervision of others, or to be guided by established policies and procedures. Methodical persons like to work on one thing until it is completed. They enjoy following a set routine and prefer work that is free from the unexpected.

O Objective persons enjoy working with tools, equipment, instruments and machinery. They like to repair or fabricate things from various materials according to specifications and using established techniques. Objective persons are interested in finding out how things operate and how they are built.

S Social persons like dealing with people. They enjoy caring for and assisting others in identifying their needs and solving their concerns. They prefer to be involved in work that requires interpersonal contact.

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[1] CWPI Interest Definitions excerpted with permission from the **NOC Career Handbook** 2003, p. 10 (See Government of Canada copyright notice in Search By Interests Help)

Minimum Education/Training Codes

1	Education/training requirements vary
2	At least Grade 10
3	Less than high school
4	High school diploma
5	Apprenticeship Trade – Grade 9
6	Apprenticeship Trade – Grade 10
7	Apprenticeship Trade – Grade 11
8	Apprenticeship Trade – Grade 12
9	Apprenticeship Trade
10	Designated Occupation
11	Designated Occupation – Grade 9
12	1 year post-secondary education/training
13	2 years post-secondary education/training
14	3 years post-secondary education/training
15	4 years post-secondary education/training
16	5 years post-secondary education/training
17	6 years post-secondary education/training
18	7 years post-secondary education/training
19	8+ years post-secondary education/training

Alberta Occupational Growth Rate Codes

1	Occupational growth information is not available
2	Above average occupational growth in Alberta
3	Average occupational growth in Alberta
4	Below average occupational growth in Alberta

Lifting Requirement Codes

1	Lifting requirements vary
2	Occupations requiring lifting up to 5 kg
3	Occupations requiring lifting up to 10 kg
4	Occupations requiring lifting up to 25 kg
5	Occupations requiring lifting more than 25 kg

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Occupational Profiles by Title

Printed February 14, 2006

Occupational Profile Title	NOC Number	Interest Code	Production Date	Education Level	Outlook Level	Lifting Level
Aboriginal Liaison	1221	MDS	MAR 2005	1	3	2
Accommodation Manager	0632	DMS	MAR 2003	13	3	2
Accountant	1111.2	MID	NOV 2005	15	3	2
Accounting Technician	1231	MDi	OCT 2005	4	3	2
Actor	5135.1	MId	MAY 2003	1	3	3
Actuary	2161.3	IMD	NOV 2005	15	3	2
Acupuncturist	3232.2	SIM	MAR 2005	14	3	3
Addictions Counsellor	4153	SId	DEC 2005	13	3	2
Administrative Assistant	1411	OMi	OCT 2005	12	4	2
Advertising Account Executive	1122.2	ISD	FEB 2004	1	2	2
Advertising Copywriter	5121.3	IMd	MAY 2005	1	3	2
Aerospace Engineer	2146	IOD	JUN 2004	15	3	1
Agricultural Commodity Inspector	2222.2	Mid	FEB 2005	1	3	3
Agricultural Engineer	2148.1	IOD	JUN 2004	15	3	4
Agricultural Equipment Technician	7312	OMI	FEB 2006	9	3	4
Agricultural Products Processing Machine Operator	9461.2	OMi	FEB 2005	1	3	4
Agrologist	2123	ISD	AUG 2005	15	3	2
Air Traffic Controller	2272.1	OMD	OCT 2005	4	3	2
Aircraft Maintenance Engineer	7315.1	OIM	SEP 2003	13	2	4
Airline Pilot	2271.1	OID	OCT 2003	4	3	3
Airline Ticket Agent	6433.1	MSO	OCT 2003	4	3	2
Animal Care Attendant	6483	MOD	FEB 2005	1	3	4
Animal Health Technologist	3213	MOI	FEB 2005	13	3	4
Animator	5241.1	IMS	MAY 2005	1	3	2
Announcer	5231	MSI	MAY 2003	12	3	3
Anthropologist	4169.1	IDM	NOV 2005	15	3	2
Appliance Service Technician	7332.1	OMi	FEB 2006	6	3	4
Arbitrator	1121	IMS	OCT 2005	1	3	2
Arborist	2225.1	OMd	MAR 2005	1	3	4
Archaeologist	4169.2	IDM	NOV 2005	15	3	3
Architect	2151	ISD	MAR 2005	17	3	2
Architectural Technologist	2251	IMO	MAR 2005	13	3	2
Archivist	5113	MIS	DEC 2005	17	4	2
Assessor	1235.1	Mds	DEC 2005	13	4	2
Astronomer	2111.2	IOD	JAN 2006	17	3	2
Athletic Therapist	3144	SIM	MAR 2005	15	2	4
Auctioneer	6411	SMd	OCT 2003	1	3	3
Audiologist	3141.1	OIS	DEC 2004	17	2	2
Auto Body Technician	7322	OMi	FEB 2006	6	4	4
Auto Detailer	6662.5	OMd	JAN 2004	3	4	3
Automated Systems Technologist	2232.1	OIM	JUL 2004	13	2	4
Automobile Accessories Installer	9482.1	OMi	SEP 2003	1	3	4
Automotive Service Technician	7321.1	OIM	FEB 2006	6	3	4
Avionics Technologist	2244.3	OMi	JUN 2004	13	2	4
Baker	6252	MOd	FEB 2006	5	4	4
Banking/Investment Manager	0122.1	DMs	DEC 2005	13	3	2
Banquet Manager	0631	DMS	FEB 2004	1	3	2
Bartender	6452	MSd	MAR 2003	4	3	3
Beekeeper	8251	DMO	MAR 2005	1	4	4
Binding and Finishing Machine Operators	9473.1	OMi	DEC 2005	1	4	4
Binding and Finishing Machine Operators	9473.2	OMi	DEC 2005	1	4	4
Biochemist	2112	IOD	SEP 2005	15	3	2
Biological Technician	2221.2	Moi	SEP 2005	13	3	3

Occupational Profile Title	NOC Number	Interest Code	Production Date	Education Level	Outlook Level	Lifting Level
Biologist	2121.1	IOD	JAN 2005	15	3	2
Biomedical Engineering Technologist	2241.1	OIM	JUN 2004	13	2	4
Biotechnologist	2121.2	IOD	SEP 2005	15	3	2
Blaster	7372.2	OID	MAR 2005	1	2	4
Boilermaker	7262	OMI	FEB 2006	7	2	4
Bricklayer	7281	OMI	FEB 2006	5	3	4
Broadcast Maintenance Technologist	5224	OMi	JUL 2004	13	3	2
Building Operator	6663	MOI	FEB 2005	3	4	5
Building Operator	7351	Oim	FEB 2005	3	4	5
Building Superintendent	6663	MOI	DEC 2005	1	4	4
Bus Driver	7412.1	OMS	SEP 2003	1	3	4
Bus Line Ticket Agent	6434.1	MSO	OCT 2003	1	3	2
Bylaw Enforcement Officer	6463.2	MDs	APR 2003	1	3	4
Cabinetmaker	7272	OMI	FEB 2006	7	3	4
Call Centre Agent	1453.2	MSi	NOV 2005	1	3	2
Canadian Forces Personnel - Commissioned Officer	0643	DMs	JAN 2005	1	1	1
Canadian Forces Personnel - Non Commissioned	6464	MOs	JAN 2005	2	1	4
Cardiology Technologist	3217	OMi	NOV 2004	12	2	4
Career and Technology Studies Teacher	4141	SID	JAN 2006	15	3	2
Career Development Professional	4213	SMI	NOV 2005	1	3	2
Carpenter	7271	OMI	FEB 2006	5	2	4
Carpet and Upholstery Cleaner	6662.1	OMd	JUN 2003	1	4	4
Cartoonist	5241.1	IMS	MAY 2005	1	3	2
Cashier	6611	MOs	OCT 2003	1	4	3
Casino Dealer	6443.2	SMD	SEP 2004	3	3	2
Casting Director	5226.7	DMO	MAY 2003	1	3	2
Caterer	0631	DMS	FEB 2004	1	3	4
Chauffeur	7413.2	OMS	OCT 2003	1	3	4
Chef	6241.1	DMI	MAR 2003	1	3	3
Chemical Engineer	2134	IOD	JUN 2004	15	2	4
Chemical Engineering Technologist	2211.1	OIM	JUL 2004	13	3	2
Chemical Technologist	2211.1	OIM	JUN 2004	13	3	2
Chemist	2112	IOD	JUL 2004	15	3	2
Child and Youth Care Worker	4212	SMi	NOV 2005	12	3	4
Chiropractic Assistant	3414.2	MSo	DEC 2004	4	3	3
Chiropractor	3122	ISM	DEC 2004	18	2	4
Choral Conductor	5132.1	DIM	MAY 2003	1	3	2
Choreographer	5131.3	IDS	JUL 2003	1	3	3
Cinematographer	5131.7	DIO	MAY 2003	1	3	2
Civil Engineer	2131	IOD	JUN 2004	15	2	1
Civil Engineering Technologist	2231.1	IMd	JUN 2004	13	2	3
Coach	5252.1	DSM	MAR 2005	1	3	2
Collection Agent	1435	MIs	NOV 2005	4	3	2
College, Technical or Vocational Instructor	4131	IDS	NOV 2005	13	3	2
Combined Laboratory and X-Ray Technologist	3211.1	MIO	FEB 2005	13	2	4
Combined Laboratory and X-Ray Technologist	3215.1	OMi	FEB 2005	13	2	4
Commercial Diver	7382	OIM	AUG 2005	12	3	4
Communication Technician	7246	OIM	FEB 2006	8	4	4
Community Health Nurse	3152.3	DMD	SEP 2004	14	2	2
Community Health Representative	4212	SMi	APR 2005	12	3	2
Composer	5132.2	IMd	MAY 2003	1	3	2
Computer and Network Operator	2281.1	OMd	JUL 2004	1	2	3
Computer Engineer	2147.1	IOD	JUL 2004	15	3	3
Computer Programmer	2174.1	IMD	JUL 2004	1	2	2
Computer Service Technician	2242	OIM	SEP 2004	1	3	4
Concrete Finisher	7282	OMi	FEB 2006	5	3	4

Occupational Profile Title	NOC Number	Interest Code	Production Date	Education Level	Outlook Level	Lifting Level
Conservation Officer	2224	DMS	JAN 2006	15	4	3
Conservator	5112.1	Dim	MAY 2003	15	4	4
Construction Craft Labourer	7611	MOi	FEB 2006	11	3	4
Cook	6242	MOd	FEB 2006	5	3	4
Correctional Officer	6462	MDs	APR 2003	4	4	4
Correctional Services Worker	4155.2	SMI	APR 2003	13	3	3
Cosmetician	6482.2	MSO	FEB 2004	1	4	3
Costume Designer	5243.1	IMD	FEB 2004	1	3	2
Craftsperson	5244	IOM	OCT 2003	1	3	2
Crane and Hoisting Equipment Operator	7371	OMi	FEB 2006	6	2	5
Creative Writer	5121.1	IMd	MAY 2005	1	3	2
Credit/Loans Manager	0122.2	DMS	NOV 2005	1	3	2
Critic	5123	ISM	MAY 2005	1	4	2
Curator	5112.2	DMI	SEP 2003	15	4	4
Custodian	6663	MOI	JUN 2003	1	4	4
Customer Support Analyst	2282	MSo	JUL 2004	1	2	2
Customs Broker	1236.1	MSd	JUN 2003	4	3	2
Customs Inspector	1228.3	MDO	MAY 2003	4	3	2
Dairy Producer	8251	DMO	FEB 2005	1	4	4
Dancer	5134.1	Mid	JUL 2003	1	3	4
Data Administrator	2172.2	IMD	JUL 2004	13	2	2
Database Analyst	2172.1	IMD	JUL 2004	13	2	2
Demographer	2161.2	IMD	DEC 2005	17	3	2
Dental Assistant	3411	MSO	OCT 2004	12	2	2
Dental Hygienist	3222.1	MOS	NOV 2004	14	3	3
Dental Technologist	3223.1	MOI	DEC 2004	13	3	4
Dentist	3113	IOs	NOV 2004	17	2	2
Denturist	3221	MOI	NOV 2004	13	3	2
Diagnostic Medical Sonographer	3216	OMi	DEC 2004	14	2	3
Dietitian	3132	DIS	MAR 2003	16	2	2
Digital Printing Machine Operator	9471	MOI	DEC 2005	1	4	4
Direct Distributor	6623.1	MSd	OCT 2003	1	4	2
Dispatcher	1475.1	MDS	JUN 2003	1	3	2
Domestic Housekeeper	6471.2	MOs	JUL 2003	1	3	4
Drafting Technician	2253.2	MIO	AUG 2005	12	3	2
Drilling and Service Rig Managers	8222	Dio	AUG 2005	4	2	4
Drilling Rig Leasehand/Floorhand	8412.1	OMd	JUL 2005	3	2	5
Driving Instructor	4216.1	SDM	OCT 2003	1	4	2
Dry Cleaning and Laundry Workers	6681.1	OMd	SEP 2003	1	3	3
Early Childhood Educator	4214.1	SMd	NOV 2005	12	3	4
Ecologist	2121.1	IOD	SEP 2005	17	3	2
Economist	4162	IMD	NOV 2005	17	3	2
Editor	5122	DIS	JUL 2005	15	3	2
Educational Assistant	6472	SMi	JAN 2006	12	3	3
Educational Counsellor	4143	SId	JAN 2006	17	3	2
Electrical Contractor	7212	Dio	FEB 2004	1	3	2
Electrical Engineer	2133	IOD	AUG 2004	15	2	3
Electrical Engineering Technologist	2241.1	OIM	SEP 2004	13	2	4
Electrical Motor Systems Technician	7333	OMI	FEB 2006	9	3	4
Electrician	7241	Oim	FEB 2006	8	2	4
Electrician	7242	Oim	FEB 2006	8	2	4
Electrologist	6482.3	MSO	JAN 2004	1	4	2
Electroneurophysiology (ENP) Technologist	3218.1	OMi	NOV 2004	13	2	3
Electronic Technician	2242	OIM	FEB 2006	8	3	4
Electronics Assemblers and Fabricators	9483.1	OMi	SEP 2003	1	2	2
Electronics Engineering Technologist	2241.1	OIM	SEP 2004	13	2	4
Elementary School Teacher	4142	SID	JAN 2006	15	3	2
Elevator Constructor	7318	OMI	FEB 2006	8	3	4

Occupational Profile Title	NOC Number	Interest Code	Production Date	Education Level	Outlook Level	Lifting Level
Embalmer	6272.2	MOd	NOV 2005	12	4	4
Emergency Medical Responder	3234	IMO	NOV 2004	4	3	4
Emergency Medical Technician - Ambulance	3234	IMO	NOV 2004	12	3	4
Emergency Medical Technologist - Paramedic	3234	IMO	NOV 2004	13	3	4
Engineering Design and Drafting Technologist	2253.1	MIO	AUG 2005	13	3	2
English as a Second Language Teacher - Adults	4131	IDS	NOV 2005	1	3	2
Entomologist	2121.1	IOD	SEP 2005	15	3	2
Environmental Auditor	2263	MID	SEP 2005	15	3	2
Environmental Education Specialist	4131	IDS	OCT 2005	15	3	2
Environmental Engineer	2131	IOD	JUN 2004	15	2	2
Ergonomist	4161.1	IDM	JAN 2006	15	3	2
Esthetician	6482.1	MSO	DEC 2003	1	4	2
Executive Housekeeper	6213	MDs	MAY 2003	1	3	2
Exhibit Designer	5243.3	IMD	OCT 2003	1	3	3
Exploration Geophysicist	2113	IOD	JUN 2004	15	3	4
Expressive Arts Therapists	3144	SIM	JAN 2005	17	2	1
Family/Marriage Counsellor	4153	SId	DEC 2005	17	3	2
Farm Worker/Technician	8431	MOi	FEB 2005	1	4	4
Farrier	7266.1	OMI	MAY 2005	1	4	4
Fashion Designer	5243.2	IMD	APR 2005	12	3	2
Feed Mill Production Worker	9461.2	OMi	MAR 2005	1	3	4
Field Production Operator	9232	Old	AUG 2005	1	2	4
Film Director	5131.2	IDS	OCT 2003	15	3	2
Financial Analyst	1112.1	MId	NOV 2005	15	3	2
Financial Customer Service Representative	1433	MSo	OCT 2005	4	4	2
Financial Planner	1114.1	MID	OCT 2005	1	3	2
Firefighter	6262	OMD	MAY 2003	1	4	4
Fish and Wildlife Officer	2224	DMS	JAN 2006	14	4	3
Fitness Instructor	5254	MSi	MAR 2005	4	2	4
Flight Attendant	6432.1	MSo	OCT 2003	4	3	4
Flight Service Specialist	2272.3	OIM	OCT 2005	4	3	2
Floorcovering Installer	7295	MOi	FEB 2006	5	3	4
Floral Designer	6421	MSd	OCT 2003	1	3	4
Food and Beverage Server	6453	MSo	MAR 2003	1	3	3
Food and Beverage Service Supervisor In Formal Dining Rooms	6212	MDs	MAR 2003	1	3	2
Food and Nutrition Manager	6212	MDs	MAR 2003	13	3	3
Food Science Technologist	2211.1	OIM	MAR 2005	13	3	2
Food Scientist	2121.1	IOD	MAR 2005	15	3	2
Food Service Helper	6641.3	OMs	MAR 2003	1	3	4
Food Service Supervisor	6212	MDs	MAR 2003	4	3	3
Foreign Service Officer	4168	DIS	MAY 2003	17	4	2
Forensic Laboratory Analyst	2211.1	OIM	OCT 2005	13	3	2
Forest Technician	2223	DMI	JAN 2006	12	3	3
Forest Technologist	2223	DMI	JAN 2006	13	3	2
Forester	2122	ISD	JAN 2006	15	3	2
Fundraiser	5124	IMS	FEB 2005	1	3	2
Funeral Attendant	6683.3	OMs	NOV 2005	1	4	4
Funeral Director	6272.1	DSM	NOV 2005	12	4	4
Furniture Mover	7452.1	MOi	OCT 2003	1	3	4
Gas Pipeline Operators and Maintenance Workers	9232	Old	AUG 2005	4	2	4
Gas Plant Operator	9232	Old	AUG 2005	1	2	4
Gas Utility Operator	7442.2	MOi	FEB 2006	10	4	4
Gasfitter	7253	OMi	FEB 2006	5	3	5
Gemmologist	7344.1	OIM	APR 2003	4	4	2
Geneticist	2121.2	IOD	NOV 2005	17	3	2

Occupational Profile Title	NOC Number	Interest Code	Production Date	Education Level	Outlook Level	Lifting Level
Geographer	4169.3	IDM	AUG 2005	15	3	2
Geological and Geophysical Technologist	2212.1	Old	OCT 2004	13	3	4
Geologist	2113	IOD	JUN 2004	15	3	2
Geomatics/Surveying Engineer	2131	IOD	JUL 2004	15	2	4
Geomatics/Surveying Technologist	2254.1	OIM	JUN 2004	13	3	4
Geriatric Medicine Specialist	3111.1	ISD	DEC 2004	19	2	2
Gerontological Specialist	4169.9	IDM	NOV 2004	1	3	2
Glazier	7292	MOI	FEB 2006	5	3	5
Golf Professional	5254	MSi	MAR 2005	14	2	4
Grain and Forage Crop Producer	8251	DMO	FEB 2005	1	4	4
Graphic Designer	5241.1	IMS	MAY 2005	13	3	2
Greenhouse Operator	8254	DMS	DEC 2003	13	4	2
Guest Services Attendant	6672.1	OSM	MAR 2003	1	3	4
Hairstylist	6271.1	IOS	FEB 2006	6	4	2
Hazardous Waste Management Technologist	2263	MID	SEP 2005	13	3	4
Health Information Management Professional	1413.3	Mid	OCT 2004	13	4	2
Health Service Administrator	0311	DMI	FEB 2005	1	3	2
Hearing Aid Practitioner	3235.1	MSO	SEP 2003	13	3	2
Heavy Equipment Operator	7421	OMi	DEC 2003	1	2	3
Heavy Equipment Technician	7312	OMI	FEB 2006	9	3	4
Heavy Equipment Technician	7321.3	OIM	FEB 2006	9	3	4
Helicopter Pilot	2271.1	OID	SEP 2003	1	3	4
Herbalist	3232.4	SID	JAN 2005	1	3	3
Heritage Interpreter	5212.3	SMd	NOV 2003	13	4	2
Historian	4169.4	IDM	NOV 2005	17	3	2
Home Economist	4164.2	IDS	MAR 2005	15	4	3
Home Inspector	2264	MId	SEP 2003	1	3	3
Homeopath	3232.5	SID	OCT 2004	16	3	2
Hotel and Motel Desk Clerk	6435	SMo	MAY 2003	4	3	2
Human Ecologist	4164.2	IDS	JAN 2006	15	4	2
Human Resources Professional	1223	SMd	OCT 2005	13	3	2
Hydrologist	2113	IOD	SEP 2005	15	3	4
Hydrometric Technician/Technologist	2212.1	Old	SEP 2005	13	3	3
Illustrator	5241.2	IMS	JUN 2005	1	3	2
Immigration Officer	1228.1	MDS	MAY 2003	4	3	2
Industrial Designer	2252	IMO	JUL 2005	1	4	2
Industrial Engineer	2141	IOD	JUN 2004	15	3	2
Industrial Engineering Technologist	2233.1	IMd	OCT 2004	13	3	2
Information Systems Consultant	2171.1	IMD	JUL 2004	15	2	2
Information Systems Quality Assurance Analyst	2171.3	IMD	JUL 2004	13	2	2
Instrument Technician	2243	OIM	FEB 2006	9	2	4
Instrumental Musician	5133.1	OMI	MAY 2003	1	3	3
Instrumentation Engineering Technologist	2232.1	OIM	NOV 2003	13	2	2
Instrumentation Engineering Technologist	2241.1	OIM	NOV 2003	13	2	2
Insulator	7293	MOi	FEB 2006	5	2	4
Insurance Adjuster	1233.1	MSd	NOV 2005	4	3	2
Insurance Agent/Broker	6231	MSd	NOV 2005	1	3	2
Insurance Underwriter	1234	MSd	NOV 2005	1	3	2
Interactive Media Developer	2174.2	IMD	JUL 2004	13	2	2
Interior Decorator	6421	MSd	MAR 2005	1	3	3
Interior Designer	5242	IMS	MAR 2005	15	3	2
Internal Auditor	1111.1	Mid	NOV 2005	15	3	2
Interpreter	5125.3	MIs	MAR 2005	15	2	2
Interpretive Naturalist	2121.1	IOD	NOV 2003	13	3	2
Investment Advisor	1113.1	ISM	NOV 2005	13	3	2
Investment Underwriter	1114.4	MID	JAN 2003	17	3	2
Ironworker	7264	OMI	FEB 2006	6	2	4

Occupational Profile Title	NOC Number	Interest Code	Production Date	Education Level	Outlook Level	Lifting Level
Jeweller	7344.1	OIM	APR 2003	1	4	2
Judge	4111	DMI	JUL 2003	18	1	2
Judicial Clerk	4211.1	MSI	OCT 2005	4	3	2
Kinesiologist	4167.1	SDI	MAR 2005	15	3	4
Kitchen Helper and Food Assembler	6641.2	OMs	MAR 2003	1	3	4
Land Agent	1225	MDs	APR 2005	1	3	2
Land Surveyor	2154	IOD	JUL 2004	15	3	3
Land Titles Examiner	4211.1	MSI	MAY 2003	4	3	2
Landscape Architect	2152	ISD	MAR 2005	15	3	2
Landscape Architectural Technologist	2225.4	OMD	MAR 2005	13	3	2
Landscape Gardener	2225.5	OMD	FEB 2006	5	3	5
Lather-Interior Systems Mechanic	7284.3	MOi	FEB 2006	5	3	4
Lawyer	4112	MID	NOV 2005	17	3	2
Legal and Realtime Reporter	1244.1	MOi	OCT 2005	13	3	2
Legal Secretary	1242	MOd	OCT 2005	12	3	2
Letter Carrier	1462	Mos	NOV 2005	1	4	4
Librarian	5111	MSd	DEC 2005	17	4	2
Library Clerk	1451	MSo	DEC 2005	4	3	3
Library Technician	5211.1	SMi	DEC 2005	13	4	3
Licensed Practical Nurse	3233.1	MSO	SEP 2004	12	2	4
Licensed Practical Nurse (Advanced Orthopaedic Specialty)	3233.1	MSO	SEP 2004	13	2	4
Life Skills Coach	4212	SMi	SEP 2003	1	3	2
Lighting Designer	5243.1	IMD	FEB 2004	1	3	2
Lighting Technician	5226.3	OMi	JUL 2005	1	3	4
Linguist	4169.5	IDM	NOV 2005	15	3	2
Livestock/Poultry Producer	8251	DMO	MAR 2005	1	4	4
Locksmith	7383.2	OMi	FEB 2006	6	4	3
Logging/Forestry Equipment Operators	8241.1	Omi	JAN 2006	1	4	3
Machinist	7231.1	OIM	FEB 2006	7	2	4
Magnetic Resonance Technologist	3215	OMI	JUL 2005	13	2	4
Mail Sorter	1461.2	Mio	NOV 2005	1	4	4
Make-Up Artist	5226.5	OMI	MAY 2003	1	3	3
Management Consultant	1122.1	IDS	NOV 2005	17	2	2
Manufacturing Engineer	2141	IOD	JUN 2004	15	3	2
Mapping Technologist	2255.1	IMO	APR 2005	13	3	2
Market Gardener	8251	DMO	MAR 2005	1	4	4
Market Research Analyst	4163	DIS	OCT 2005	1	2	2
Marketing Manager	0611.2	DSI	OCT 2005	13	3	2
Massage Therapist	3235.4	MSO	NOV 2004	1	3	3
Materials Engineering Technologist	2233.1	IMd	JUL 2004	13	3	4
Materials/Metallurgical Engineer	2142	IOD	JUL 2004	15	3	3
Mathematician	2161.1	IMD	NOV 2005	15	3	2
Meat Cutter	6251	MOd	MAY 2003	1	3	4
Mechanical Engineer	2132	IOD	SEP 2004	15	2	2
Mechanical Engineering Technologist	2232.1	OIM	JUL 2004	13	2	3
Mediator	1121	IMS	OCT 2005	1	3	2
Medical Laboratory Technologist	3211.1	MIO	FEB 2005	13	2	3
Medical Secretary	1243	SOd	OCT 2005	12	2	3
Medical Transcriptionist	1244.2	MOi	NOV 2005	12	3	2
Mental Health Worker	4212	SMi	JUN 2005	13	3	2
Messenger/Courier	1463	Mos	SEP 2002	1	3	4
Meteorologist	2114	IOD	OCT 2005	15	3	2
Microbiologist	2121.2	IOD	SEP 2005	15	3	2
Midwife	3232.1	SID	JAN 2005	15	3	4
Millwright	7311	OIM	FEB 2006	7	3	4
Mining Engineer	2143	IOD	JUL 2004	15	3	3
Model	5232.4	SMi	APR 2005	1	3	2

Occupational Profile Title	NOC Number	Interest Code	Production Date	Education Level	Outlook Level	Lifting Level
Mortgage Agent	1232	MSd	FEB 2005	4	3	2
Motorcycle Mechanic	7334	OMi	FEB 2006	5	3	4
Municipal Administrator	0414	DIM	JUN 2003	13	4	2
Municipal Recycling Truck Driver	7411.2	MOd	JUN 2003	1	3	4
Municipal Recycling Waste Handler	9619	MOi	JUN 2003	1	4	4
Museum Technician	5212.6	OMi	OCT 2003	13	4	4
Music Copyist	5132.3	DIm	MAY 2003	1	3	2
Musical Instrument Repair Technician	7445	OMi	MAY 2003	4	3	3
Nail Technician	6482.4	MSO	DEC 2003	1	4	2
Nanny	6474.2	SMd	JUN 2003	1	3	4
Naturopathic Doctor	3123.3	IMS	FEB 2005	18	2	3
Nuclear Medicine Technologist	3215.2	OMi	NOV 2004	13	2	4
Nurse Practitioner	3152	SMD	OCT 2004	17	2	3
Nursery Operator	8254	DMS	DEC 2003	13	4	3
Occupational Health and Safety Inspector	2263	MID	MAR 2005	1	3	2
Occupational Health Nurse	3152.2	SMD	SEP 2004	14	2	3
Occupational Hygienist	4161.2	IDM	MAR 2005	15	3	2
Occupational Therapist	3143	SIM	FEB 2005	15	2	4
Occupational Therapist Assistant	3414.2	MSo	DEC 2004	13	3	4
Oceanographer	2113	IOD	OCT 2005	17	3	2
Office Equipment Technician	2242	OIM	APR 2005	1	3	3
Oil and Gas Well Loggers and Testers	8232.2	OMi	AUG 2005	1	2	4
Oil Pipeline Operators and Maintenance Workers	9232	Old	AUG 2005	4	2	4
Operations Manager	0911	DIM	JAN 2006	1	3	2
Operations Research Analyst	2161.2	IMD	JAN 2006	15	3	2
Ophthalmic Assistant	3235.5	MSO	JAN 2005	4	3	2
Optical Technician	3414.3	OMi	FEB 2005	1	3	2
Optician	3231	OMS	FEB 2005	4	3	2
Optometrist	3121	OSD	JAN 2005	17	2	2
Orchestra/Band Conductor	5132.1	DIM	MAY 2003	15	3	2
Orchestrator/Arranger	5132.3	DIm	MAY 2003	1	3	2
Outdoor Power Equipment Technician	7335	OMi	FEB 2006	9	3	5
Outdoor Sport/Recreation Guide	6442	SMO	MAY 2005	1	3	4
Painter and Decorator	7294	MOi	FEB 2006	5	3	4
Painter/Printmaker	5136.1	IOm	JUL 2005	1	3	2
Paralegal	4211.1	MSI	OCT 2005	13	3	2
Park Warden	2224	DMS	JAN 2006	15	4	4
Parole/Probation Officer	4155.1	SMD	APR 2003	13	3	2
Parts Technician	1472	MOS	FEB 2006	6	3	3
Pathologist	3111.2	IOD	DEC 2004	19	2	2
Pediatrician	3111.1	ISD	NOV 2004	19	2	3
Personal Care Attendant	3413	SMo	JAN 2005	2	3	4
Personal Care Attendant	6471.1	SMo	JAN 2005	2	3	4
Personal Property/Equipment Appraiser	1235.3	Mds	DEC 2003	1	4	2
Pest Control Operator	7444	OMi	MAR 2005	1	4	4
Pet Groomer	6483	MOD	JUL 2003	1	3	4
Petroleum Engineer	2145	IOD	JUN 2004	15	2	3
Petroleum Engineering Technologist	2212.1	Old	OCT 2004	13	3	3
Pharmacist	3131.1	MID	MAR 2005	16	2	3
Pharmacologist	2121.2	IOD	FEB 2005	15	3	2
Pharmacy Assistant/Technician	3414.4	MIO	JAN 2005	1	3	3
Photographer	5221	IMO	JUN 2005	1	3	3
Photographic Processing Technician	9474	OMI	MAY 2005	1	4	2
Physical Therapy Assistant	3414.2	MSo	DEC 2004	1	3	4
Physician	3112	ISD	NOV 2004	19	2	3
Physicist	2111.1	IOD	DEC 2005	15	3	2
Physiologist	2121.1	IOD	APR 2005	19	3	2

Occupational Profile Title	NOC Number	Interest Code	Production Date	Education Level	Outlook Level	Lifting Level
Physiotherapist	3142	MIS	FEB 2005	17	2	4
Plasterer	7284.1	MOi	DEC 2003	1	3	4
Plastics Processing Technician	2233.2	OMi	FEB 2004	1	3	4
Plumber	7251	Oim	FEB 2006	8	2	5
Podiatrist	3123.1	IMO	FEB 2005	19	2	2
Police Officer	6261	MDS	APR 2003	1	3	4
Political Scientist	4169.6	IDM	JAN 2006	17	3	2
Pollution Control Technologist	2211.1	OIM	SEP 2005	13	3	4
Postal/Wicket Clerk	1461.1	Mis	NOV 2005	1	4	4
Power Engineer	7351	Oim	JUL 2005	1	3	4
Power Lineman	7244	Oim	FEB 2006	9	3	4
Power System Electrician	7243	Oim	FEB 2006	9	2	3
Pre-Press Technician	9472.5	OMI	DEC 2005	4	3	2
Printing Press Operator	7381	MOd	DEC 2005	4	4	4
Private Investigator	6465.2	MIS	APR 2003	1	3	3
Private Trainer/Facilitator	1121	IMS	NOV 2005	1	3	2
Producer - Film, Radio, Television and Theatre	5131.1	IDS	MAY 2003	1	3	2
Professional Athlete	5251	Mdi	MAR 2005	1	3	4
Property Manager	1224	MDs	JAN 2006	4	3	2
Prosthetic/Orthotic Technician	3219.4	OIM	MAR 2005	13	2	4
Prosthetist and Orthotist	3219.3	OID	MAR 2005	13	2	4
Psychiatric Aide	3413	SMo	FEB 2005	1	2	4
Psychiatric Nurse	3152.4	SMD	SEP 2004	13	2	4
Psychiatrist	3111.1	ISD	OCT 2004	19	2	2
Psychologist	4151	SIM	JUL 2005	17	3	2
Public Health Inspector	2263	MID	DEC 2003	15	3	3
Public Relations Representative	5124	IMS	DEC 2005	13	3	2
Pulpmill Operator	9432	OMi	OCT 2005	4	4	3
Purchasing Agent	1225	MDs	MAY 2003	1	3	2
Radiation Therapist	3215.3	OMi	DEC 2004	13	2	3
Radiological Technologist	3215.1	OMi	JAN 2005	13	2	3
Railway Car Mechanic	7314	OMI	JUN 2003	1	4	4
Real Estate Agent	6232	SMd	DEC 2005	4	3	2
Real Estate Appraiser	1235.3	Mds	JAN 2006	1	4	2
Receptionist	1414.1	SMd	OCT 2005	1	4	2
Recording/Sound Engineer	5225	OMI	MAY 2003	1	3	2
Recreation and Sport Administrator	0513	DMI	MAR 2005	15	3	2
Recreation Co-ordinator/Supervisor	4167.5	SDI	MAR 2005	13	3	4
Recreation Facility Operator	6671.2	MOS	MAR 2005	1	3	4
Recreation Therapist	3144	SIM	FEB 2005	13	2	3
Recreation Vehicle Service Technician	7383.3	OIM	FEB 2006	6	4	5
Refinery/Upgrader Process Operator	9232	Old	AUG 2005	12	2	4
Reflexologist	3232.6	SIM	NOV 2004	1	3	2
Refrigeration and Air Conditioning Mechanic	7313	OMI	FEB 2006	8	3	4
Refuse Collector	7621	Moi	JUN 2003	1	4	4
Refuse Truck Driver	7422	OMi	JUN 2003	1	4	4
Registered Nurse	3152.1	SMD	SEP 2004	14	2	4
Rehabilitation Practitioner	4212	SMi	FEB 2005	13	3	2
Religious Leader	4154	SMI	NOV 2002	1	4	2
Reporter	5123	ISM	MAY 2005	13	4	2
Respiratory Therapist	3214.1	OMi	JAN 2005	14	2	3
Restaurant Manager	0631	DMS	MAR 2003	1	3	2
Retail Salesperson	6421	MSd	SEP 2003	1	3	3
Retail Shelf Stocker	6622	Mso	SEP 2003	1	3	4
Retail Store Manager	0621	DMi	OCT 2003	1	4	2
Rig Technician	8232.1	ODm	JUL 2005	9	2	4
Rig Technician	8412.1	OMd	JUL 2005	9	2	4
Roofer	7291.1	MOi	FEB 2006	5	3	4

Occupational Profile Title	NOC Number	Interest Code	Production Date	Education Level	Outlook Level	Lifting Level
Room/Housekeeping Attendant	6661	MOi	MAR 2003	1	4	4
Safety Codes Officer	2264	MId	MAY 2003	1	3	2
Safety Officer	2263	MID	MAR 2005	1	3	3
Sales Representative (Wholesale, Nontechnical)	6411	SMd	OCT 2003	4	3	3
Sawfiler	7383.5	OMi	FEB 2006	6	4	5
Sawmill Machine Operator	9431	OMi	DEC 2005	1	4	4
School Business Official	0313.2	DMs	DEC 2003	1	3	2
Sculptor	5136.2	IOm	JUN 2005	1	3	3
Secondary School Teacher	4141	SID	JAN 2006	15	3	2
Security Alarm Installer	2242	OIM	DEC 2003	4	3	3
Security Guard	6651	Msd	APR 2003	1	3	3
Seed Cleaning/Conditioning Plant Manager	8252	OMi	MAR 2005	1	4	2
Seismic Observer	2212.2	OMi	SEP 2005	1	3	4
Seismic Worker	8615	MOi	SEP 2005	1	2	4
Service Rig Personnel	8412.1	OMd	JUL 2005	3	2	5
Set Designer	5243.1	IMD	FEB 2004	1	3	2
Sheet Metal Worker	7261	OMI	FEB 2006	9	3	4
Shipper and Receiver	1471	MOd	OCT 2005	1	3	4
Sign Language Interpreter	5125.3	MIs	MAR 2005	13	2	2
Singer	5133.2	Mid	MAY 2003	1	3	2
Social Worker	4152	SID	DEC 2005	13	3	2
Sociologist	4169.8	IDM	NOV 2005	17	3	2
Software Engineer	2173	IMD	JUL 2004	15	2	2
Soil Scientist	2115.2	IOD	SEP 2005	15	3	2
Songwriter	5132.2	IMd	MAY 2003	1	3	2
Special Event Co-ordinator	1226	DSI	APR 2003	13	3	2
Special Needs Teacher	4142	SID	JAN 2006	15	3	2
Speech-Language Pathologist	3141.2	MIS	DEC 2004	17	2	2
Speech-Language Pathologist Assistant	3235.3	MSO	DEC 2004	1	3	2
Sport Medicine Physician	3112	ISD	DEC 2004	19	2	3
Sports Instructor	5254	MSi	MAR 2005	1	2	4
Sports Official	5253	MDs	MAR 2005	1	3	2
Sprinkler Systems Installer	7252.2	Oim	FEB 2006	6	2	4
Stage Manager	5226.7	DMO	JUN 2002	1	3	2
Station Attendant/Ramp Service Agent	7437	MOi	OCT 2003	4	3	4
Statistician	2161.2	IMD	DEC 2005	15	3	2
Steamfitter-Pipefitter	7252.1	Oim	FEB 2006	6	2	5
Steel Detailer	2253.1	MIO	FEB 2006	10	3	2
Steel Detailer	2253.2	MIO	FEB 2006	10	3	2
Sterile Processing Technician	3414.5	OMi	AUG 2003	4	3	3
Structural Steel and Plate Fitter	7263	OMI	FEB 2006	5	2	4
Surface Mining Equipment Operator	7421	OMi	AUG 2005	1	2	4
Swine Technician	8253.2	MId	FEB 2005	3	4	4
Systems Auditor	2171.4	MDI	JUL 2004	15	2	2
Systems Security Analyst	2171.2	MID	JUL 2004	13	2	2
Systems Tester	2283	MOi	JUL 2004	1	2	2
Taxi Driver	7413.1	OMS	JUL 2003	1	3	4
Technical Sales Representative	6221	OSi	OCT 2003	1	2	2
Technical Writer	5121.2	IMo	JUN 2005	1	3	2
Telecommunications Engineering Technologist	2241.1	OIM	FEB 2004	13	2	4
Telemarketer	6623.4	Msd	NOV 2005	1	4	2
Telephone Operator	1424	MSO	SEP 2002	4	4	2
Television Audio/Video Operator	5225	OMI	APR 2003	13	3	2
Television Camera Operator	5222	OMI	APR 2003	13	3	4
Theatre Director	5131.2	IDS	SEP 2003	15	3	2
Tilesetter	7283	OMI	FEB 2006	5	3	5
Tool and Die Maker	7232.1	OIM	FEB 2006	7	3	4

Occupational Profile Title	NOC Number	Interest Code	Production Date	Education Level	Outlook Level	Lifting Level
Tour Guide	6441.1	SMd	JUN 2003	1	3	2
Toxicologist	2121.2	IOD	FEB 2005	15	3	2
Traffic Co-ordinator	1473	MIs	MAY 2003	4	3	2
Traffic Manager	0713.1	DMs	OCT 2003	1	2	2
Translator	5125.1	MId	MAR 2005	15	2	2
Transport Refrigeration Technician	7313	OMI	FEB 2006	9	3	4
Travel Consultant	6431	SMI	FEB 2005	1	4	2
Travel Guide	6441.2	SMd	MAY 2003	1	3	4
Truck Driver	7411.1	MOd	OCT 2003	1	3	3
Turfgrass Management Specialist	2225.2	OMD	MAR 2005	1	3	4
Underground Miner	8231	OIM	AUG 2005	1	4	4
Unit Clerk	1243	SOd	OCT 2005	4	2	3
University Professor	4121	IDS	NOV 2005	19	3	2
Upholsterer	7341	OMI	DEC 2003	3	4	4
Urban, Regional and Park Planners	2153	ISD	JUN 2003	15	2	2
Utility Clerk	1453.2	MSi	NOV 2005	4	3	2
Vending Machine Repairer	7445	OMi	JAN 2004	4	3	4
Vending Machine Route Worker	7414	MOs	MAR 2005	4	3	4
Veterinarian	3114	IOs	MAR 2005	17	3	4
Visual Merchandiser	5243.3	IMD	MAY 2003	1	3	2
Volunteer Manager	4212	SMi	FEB 2005	1	3	2
Warehousing Professionals	7452.2	OMi	FEB 2006	10	3	4
Watch Repairer	7344.2	OIM	APR 2003	1	4	2
Water and Wastewater Treatment Plant Operator	9424.1	OIM	FEB 2003	4	4	4
Water and Wastewater Treatment Plant Operator	9424.2	OIM	FEB 2003	4	4	4
Water Well Driller	7373	OMi	FEB 2006	5	2	5
Web Designer	2175	IMD	JUL 2004	13	2	2
Web Technician	2281.2	Omi	JUL 2004	13	2	3
Webmaster	2175	IMD	JUL 2004	13	2	2
Welder	7265.1	OMI	FEB 2006	5	2	1
Well Service Equipment Operator	8412.2	OMi	JUL 2005	4	2	4
Wildland Firefighter	8422	OMi	FEB 2004	1	4	5
Wireline Field Supervisor	8222	Dio	SEP 2005	1	2	2
Word Processing Operator	1411	OMi	OCT 2005	4	4	2

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Occupational Profiles by NOC Number

Profile Title (within NOC group)		Interest Code	Production Date	Education Level	Outlook Level	Lifting Level
0122.1	**Banking and Other Investment Managers**					
	Banking/Investment Manager	DMs	DEC 2005	13	3	2
0122.2	**Credit Managers**					
	Credit/Loans Manager	DMS	NOV 2005	1	3	2
0311	**Managers in Health Care**					
	Health Service Administrator	DMI	FEB 2005	1	3	2
0313.2	**Administrators of Elementary and Secondary Education**					
	School Business Official	DMs	DEC 2003	1	3	2
0414	**Other Managers in Public Administration**					
	Municipal Administrator	DIM	JUN 2003	13	4	2
0513	**Recreation and Sports Program and Service Directors**					
	Recreation and Sport Administrator	DMI	MAR 2005	15	3	2
0611.2	**Marketing Managers**					
	Marketing Manager	DSI	OCT 2005	13	3	2
0621	**Retail Trade Managers**					
	Retail Store Manager	DMi	OCT 2003	1	4	2
0631	**Restaurant and Food Service Managers**					
	Banquet Manager	DMS	FEB 2004	1	3	2
	Caterer	DMS	FEB 2004	1	3	4
	Restaurant Manager	DMS	MAR 2003	1	3	2
0632	**Accommodation Service Managers**					
	Accommodation Manager	DMS	MAR 2003	13	3	2
0643	**Commissioned Officers, Armed Forces**					
	Canadian Forces Personnel - Commissioned Officer	DMs	JAN 2005	1	1	1
0713.1	**Transportation Managers, Operations**					
	Traffic Manager	DMs	OCT 2003	1	2	2
0911	**Manufacturing Managers**					
	Operations Manager	DIM	JAN 2006	1	3	2
1111.1	**Financial Auditors**					
	Internal Auditor	Mid	NOV 2005	15	3	2
1111.2	**Accountants**					
	Accountant	MID	NOV 2005	15	3	2
1112.1	**Financial Analysts**					
	Financial Analyst	MId	NOV 2005	15	3	2
1113.1	**Securities Agents and Investment Dealers**					
	Investment Advisor	ISM	NOV 2005	13	3	2
1114.1	**Financial Planners**					
	Financial Planner	MID	OCT 2005	1	3	2
1114.4	**Underwriters**					
	Investment Underwriter	MID	JAN 2003	17	3	2
1121	**Specialists in Human Resources**					
	Arbitrator	IMS	OCT 2005	1	3	2
	Mediator	IMS	OCT 2005	1	3	2
	Private Trainer/Facilitator	IMS	NOV 2005	1	3	2
1122.1	**Management Consultants**					
	Management Consultant	IDS	NOV 2005	17	2	2
1122.2	**Advertising and Promotion Consultants**					
	Advertising Account Executive	ISD	FEB 2004	1	2	2
1221	**Administrative Officers**					
	Aboriginal Liaison	MDS	MAR 2005	1	3	2

Profile	Title (within NOC group)	Interest Code	Production Date	Education Level	Outlook Level	Lifting Level
1223	**Personnel and Recruitment Officers**					
	Human Resources Professional	SMd	OCT 2005	13	3	2
1224	**Property Administrators**					
	Property Manager	MDs	JAN 2006	4	3	2
1225	**Purchasing Agents and Officers**					
	Land Agent	MDs	APR 2005	1	3	2
	Purchasing Agent	MDs	MAY 2003	1	3	2
1226	**Conference and Event Planners**					
	Special Event Co-ordinator	DSI	APR 2003	13	3	2
1228.1	**Immigration Officers**					
	Immigration Officer	MDS	MAY 2003	4	3	2
1228.3	**Customs Officers and Inspectors**					
	Customs Inspector	MDO	MAY 2003	4	3	2
1231	**Bookkeepers**					
	Accounting Technician	MDi	OCT 2005	4	3	2
1232	**Loan Officers**					
	Mortgage Agent	MSd	FEB 2005	4	3	2
1233.1	**Insurance Adjusters**					
	Insurance Adjuster	MSd	NOV 2005	4	3	2
1234	**Insurance Underwriters**					
	Insurance Underwriter	MSd	NOV 2005	1	3	2
1235.1	**Assessors**					
	Assessor	Mds	DEC 2005	13	4	2
1235.3	**Appraisers**					
	Personal Property/Equipment Appraiser	Mds	DEC 2003	1	4	2
	Real Estate Appraiser	Mds	JAN 2006	1	4	2
1236.1	**Customs Brokers**					
	Customs Broker	MSd	JUN 2003	4	3	2
1242	**Legal Secretaries**					
	Legal Secretary	MOd	OCT 2005	12	3	2
1243	**Medical Secretaries**					
	Medical Secretary	SOd	OCT 2005	12	2	3
	Unit Clerk	SOd	OCT 2005	4	2	3
1244.1	**Court Recorders**					
	Legal and Realtime Reporter	MOi	OCT 2005	13	3	2
1244.2	**Medical Transcriptionists**					
	Medical Transcriptionist	MOi	NOV 2005	12	3	2
1411	**General Office Clerks**					
	Administrative Assistant	OMi	OCT 2005	12	4	2
	Word Processing Operator	OMi	OCT 2005	4	4	2
1413.3	**Health Records Technicians**					
	Health Information Management Professional	Mid	OCT 2004	13	4	2
1414.1	**Receptionists**					
	Receptionist	SMd	OCT 2005	1	4	2
1424	**Telephone Operators**					
	Telephone Operator	MSO	SEP 2002	4	4	2
1433	**Customer Service Representatives - Financial Services**					
	Financial Customer Service Representative	MSo	OCT 2005	4	4	2
1435	**Collectors**					
	Collection Agent	MIs	NOV 2005	4	3	2
1451	**Library Clerks**					
	Library Clerk	MSo	DEC 2005	4	3	3
1453.2	**Call Centre Agents**					
	Call Centre Agent	MSi	NOV 2005	1	3	2
	Utility Clerk	MSi	NOV 2005	4	3	2
1461.1	**Postal Clerks**					
	Postal/Wicket Clerk	Mis	NOV 2005	1	4	4

Profile Title (within NOC group)		Interest Code	Production Date	Education Level	Outlook Level	Lifting Level
1461.2	**Mail Sorters**					
	Mail Sorter	Mio	NOV 2005	1	4	4
1462	**Letter Carriers**					
	Letter Carrier	Mos	NOV 2005	1	4	4
1463	**Couriers, Messengers and Door-to-Door Distributors**					
	Messenger/Courier	Mos	SEP 2002	1	3	4
1471	**Shippers and Receivers**					
	Shipper and Receiver	MOd	OCT 2005	1	3	4
1472	**Storekeepers and Parts Clerks**					
	Parts Technician	MOS	FEB 2006	6	3	3
1473	**Production Clerks**					
	Traffic Co-ordinator	MIs	MAY 2003	4	3	2
1475.1	**Dispatchers**					
	Dispatcher	MDS	JUN 2003	1	3	2
2111.1	**Physicists**					
	Physicist	IOD	DEC 2005	15	3	2
2111.2	**Astronomers**					
	Astronomer	IOD	JAN 2006	17	3	2
2112	**Chemists**					
	Biochemist	IOD	SEP 2005	15	3	2
	Chemist	IOD	JUL 2004	15	3	2
2113	**Geologists, Geochemists and Geophysicists**					
	Exploration Geophysicist	IOD	JUN 2004	15	3	4
	Geologist	IOD	JUN 2004	15	3	2
	Hydrologist	IOD	SEP 2005	15	3	4
	Oceanographer	IOD	OCT 2005	17	3	2
2114	**Meteorologists**					
	Meteorologist	IOD	OCT 2005	15	3	2
2115.2	**Soil Scientists**					
	Soil Scientist	IOD	SEP 2005	15	3	2
2121.1	**Biologists**					
	Biologist	IOD	JAN 2005	15	3	2
	Ecologist	IOD	SEP 2005	17	3	2
	Entomologist	IOD	SEP 2005	15	3	2
	Food Scientist	IOD	MAR 2005	15	3	2
	Interpretive Naturalist	IOD	NOV 2003	13	3	2
	Physiologist	IOD	APR 2005	19	3	2
2121.2	**Microbiologists and Cell and Molecular Biologists**					
	Biotechnologist	IOD	SEP 2005	15	3	2
	Geneticist	IOD	NOV 2005	17	3	2
	Microbiologist	IOD	SEP 2005	15	3	2
	Pharmacologist	IOD	FEB 2005	15	3	2
	Toxicologist	IOD	FEB 2005	15	3	2
2122	**Forestry Professionals**					
	Forester	ISD	JAN 2006	15	3	2
2123	**Agricultural Representatives, Consultants and Specialists**					
	Agrologist	ISD	AUG 2005	15	3	2
2131	**Civil Engineers**					
	Civil Engineer	IOD	JUN 2004	15	2	1
	Environmental Engineer	IOD	JUN 2004	15	2	2
	Geomatics/Surveying Engineer	IOD	JUL 2004	15	2	4
2132	**Mechanical Engineers**					
	Mechanical Engineer	IOD	SEP 2004	15	2	2

Profile	Title (within NOC group)	Interest Code	Production Date	Education Level	Outlook Level	Lifting Level
2133	**Electrical and Electronics Engineers**					
	Electrical Engineer	IOD	AUG 2004	15	2	3
2134	**Chemical Engineers**					
	Chemical Engineer	IOD	JUN 2004	15	2	4
2141	**Industrial and Manufacturing Engineers**					
	Industrial Engineer	IOD	JUN 2004	15	3	2
	Manufacturing Engineer	IOD	JUN 2004	15	3	2
2142	**Metallurgical and Materials Engineers**					
	Materials/Metallurgical Engineer	IOD	JUL 2004	15	3	3
2143	**Mining Engineers**					
	Mining Engineer	IOD	JUL 2004	15	3	3
2145	**Petroleum Engineers**					
	Petroleum Engineer	IOD	JUN 2004	15	2	3
2146	**Aerospace Engineers**					
	Aerospace Engineer	IOD	JUN 2004	15	3	1
2147.1	**Computer and Telecommunications Hardware Engineers**					
	Computer Engineer	IOD	JUL 2004	15	3	3
2148.1	**Agricultural and Bio-resource Engineers**					
	Agricultural Engineer	IOD	JUN 2004	15	3	4
2151	**Architects**					
	Architect	ISD	MAR 2005	17	3	2
2152	**Landscape Architects**					
	Landscape Architect	ISD	MAR 2005	15	3	2
2153	**Urban and Land Use Planners**					
	Urban, Regional and Park Planners	ISD	JUN 2003	15	2	2
2154	**Land Surveyors**					
	Land Surveyor	IOD	JUL 2004	15	3	3
2161.1	**Mathematicians**					
	Mathematician	IMD	NOV 2005	15	3	2
2161.2	**Statisticians**					
	Demographer	IMD	DEC 2005	17	3	2
	Operations Research Analyst	IMD	JAN 2006	15	3	2
	Statistician	IMD	DEC 2005	15	3	2
2161.3	**Actuaries**					
	Actuary	IMD	NOV 2005	15	3	2
2171.1	**Information Systems Business Analysts and Consultants**					
	Information Systems Consultant	IMD	JUL 2004	15	2	2
2171.2	**Systems Security Analysts**					
	Systems Security Analyst	MID	JUL 2004	13	2	2
2171.3	**Information Systems Quality Assurance Analysts**					
	Information Systems Quality Assurance Analyst	IMD	JUL 2004	13	2	2
2171.4	**Systems Auditors**					
	Systems Auditor	MDI	JUL 2004	15	2	2
2172.1	**Database Analysts**					
	Database Analyst	IMD	JUL 2004	13	2	2
2172.2	**Database Administrators**					
	Data Administrator	IMD	JUL 2004	13	2	2
2173	**Software Engineers**					
	Software Engineer	IMD	JUL 2004	15	2	2
2174.1	**Computer Programmers**					
	Computer Programmer	IMD	JUL 2004	1	2	2
2174.2	**Interactive Media Developers**					
	Interactive Media Developer	IMD	JUL 2004	13	2	2

Profile	Title (within NOC group)	Interest Code	Production Date	Education Level	Outlook Level	Lifting Level
2175	**Web Designers and Developers**					
	Web Designer	IMD	JUL 2004	13	2	2
	Webmaster	IMD	JUL 2004	13	2	2
2211.1	**Chemical Technologists**					
	Chemical Engineering Technologist	OIM	JUL 2004	13	3	2
	Chemical Technologist	OIM	JUN 2004	13	3	2
	Food Science Technologist	OIM	MAR 2005	13	3	2
	Forensic Laboratory Analyst	OIM	OCT 2005	13	3	2
	Pollution Control Technologist	OIM	SEP 2005	13	3	4
2212.1	**Geological and Mineral Technologists**					
	Geological and Geophysical Technologist	OId	OCT 2004	13	3	4
	Hydrometric Technician/Technologist	OId	SEP 2005	13	3	3
	Petroleum Engineering Technologist	OId	OCT 2004	13	3	3
2212.2	**Geological and Mineral Technicians**					
	Seismic Observer	OMi	SEP 2005	1	3	4
2221.2	**Biological Technicians**					
	Biological Technician	Moi	SEP 2005	13	3	3
2222.2	**Fruit and Vegetables Inspectors**					
	Agricultural Commodity Inspector	Mid	FEB 2005	1	3	3
2223	**Forestry Technologists and Technicians**					
	Forest Technician	DMI	JAN 2006	12	3	3
	Forest Technologist	DMI	JAN 2006	13	3	2
2224	**Conservation and Fishery Officers**					
	Conservation Officer	DMS	JAN 2006	15	4	3
	Fish and Wildlife Officer	DMS	JAN 2006	14	4	3
	Park Warden	DMS	JAN 2006	15	4	4
2225.1	**Arborists and Tree Service Technicians**					
	Arborist	OMd	MAR 2005	1	3	4
2225.2	**Golf Course Superintendents**					
	Turfgrass Management Specialist	OMD	MAR 2005	1	3	4
2225.4	**Landscape Designers and Landscape Architectural Technicians and Technologists**					
	Landscape Architectural Technologist	OMD	MAR 2005	13	3	2
2225.5	**Landscape Gardeners**					
	Landscape Gardener	OMD	FEB 2006	5	3	5
2231.1	**Civil Engineering Technologists**					
	Civil Engineering Technologist	IMd	JUN 2004	13	2	3
2232.1	**Mechanical Engineering Technologists**					
	Automated Systems Technologist	OIM	JUL 2004	13	2	4
	Instrumentation Engineering Technologist	OIM	NOV 2003	13	2	2
	Mechanical Engineering Technologist	OIM	JUL 2004	13	2	3
2233.1	**Industrial Engineering and Manufacturing Technologists**					
	Industrial Engineering Technologist	IMd	OCT 2004	13	3	2
	Materials Engineering Technologist	IMd	JUL 2004	13	3	4
2233.2	**Industrial Engineering and Manufacturing Technicians**					
	Plastics Processing Technician	OMi	FEB 2004	1	3	4
2241.1	**Electrical and Electronics Engineering Technologists**					
	Biomedical Engineering Technologist	OIM	JUN 2004	13	2	4
	Electrical Engineering Technologist	OIM	SEP 2004	13	2	4
	Electronics Engineering Technologist	OIM	SEP 2004	13	2	4
	Instrumentation Engineering Technologist	OIM	NOV 2003	13	2	2
	Telecommunications Engineering Technologist	OIM	FEB 2004	13	2	4

Profile Title (within NOC group)		Interest Code	Production Date	Education Level	Outlook Level	Lifting Level
2242	**Electronic Service Technicians (Household and Business Equipment)**					
	Computer Service Technician	OIM	SEP 2004	1	3	4
	Electronic Technician	OIM	FEB 2006	8	3	4
	Office Equipment Technician	OIM	APR 2005	1	3	3
	Security Alarm Installer	OIM	DEC 2003	4	3	3
2243	**Industrial Instrument Technicians and Mechanics**					
	Instrument Technician	OIM	FEB 2006	9	2	4
2244.3	***Avionics Mechanics and Technicians***					
	Avionics Technologist	OMi	JUN 2004	13	2	4
2251	**Architectural Technologists and Technicians**					
	Architectural Technologist	IMO	MAR 2005	13	3	2
2252	**Industrial Designers**					
	Industrial Designer	IMO	JUL 2005	1	4	2
2253.1	**Drafting Technologists**					
	Engineering Design and Drafting Technologist	MIO	AUG 2005	13	3	2
	Steel Detailer	MIO	FEB 2006	10	3	2
2253.2	**Drafting Technicians**					
	Drafting Technician	MIO	AUG 2005	12	3	2
	Steel Detailer	MIO	FEB 2006	10	3	2
2254.1	**Survey Technologists**					
	Geomatics/Surveying Technologist	OIM	JUN 2004	13	3	4
2255.1	**Cartographic Technologists and Technicians**					
	Mapping Technologist	IMO	APR 2005	13	3	2
2263	**Inspectors in Public and Environmental Health and Occupational Health and Safety**					
	Environmental Auditor	MID	SEP 2005	15	3	2
	Hazardous Waste Management Technologist	MID	SEP 2005	13	3	4
	Occupational Health and Safety Inspector	MID	MAR 2005	1	3	2
	Public Health Inspector	MID	DEC 2003	15	3	3
	Safety Officer	MID	MAR 2005	1	3	3
2264	**Construction Inspectors**					
	Home Inspector	MId	SEP 2003	1	3	3
	Safety Codes Officer	MId	MAY 2003	1	3	2
2271.1	**Pilots**					
	Airline Pilot	OID	OCT 2003	4	3	3
	Helicopter Pilot	OID	SEP 2003	1	3	4
2272.1	**Air Traffic Controllers**					
	Air Traffic Controller	OMD	OCT 2005	4	3	2
2272.3	**Flight Service Specialists**					
	Flight Service Specialist	OIM	OCT 2005	4	3	2
2281.1	**Computer and Network Operators**					
	Computer and Network Operator	OMd	JUL 2004	1	2	3
2281.2	**Web Technicians**					
	Web Technician	Omi	JUL 2004	13	2	3
2282	**User Support Technicians**					
	Customer Support Analyst	MSo	JUL 2004	1	2	2
2283	**Systems Testing Technicians**					
	Systems Tester	MOi	JUL 2004	1	2	2
3111.1	**Specialists in Clinical Medicine**					
	Geriatric Medicine Specialist	ISD	DEC 2004	19	2	2
	Pediatrician	ISD	NOV 2004	19	2	3
	Psychiatrist	ISD	OCT 2004	19	2	2

Profile Title (within NOC group)		Interest Code	Production Date	Education Level	Outlook Level	Lifting Level
3111.2	**Specialists in Laboratory Medicine**					
	Pathologist	IOD	DEC 2004	19	2	2
3112	**General Practitioners and Family Physicians**					
	Physician	ISD	NOV 2004	19	2	3
	Sport Medicine Physician	ISD	DEC 2004	19	2	3
3113	**Dentists**					
	Dentist	IOs	NOV 2004	17	2	2
3114	**Veterinarians**					
	Veterinarian	IOs	MAR 2005	17	3	4
3121	**Optometrists**					
	Optometrist	OSD	JAN 2005	17	2	2
3122	**Chiropractors**					
	Chiropractor	ISM	DEC 2004	18	2	4
3123.1	**Doctors of Podiatric Medicine**					
	Podiatrist	IMO	FEB 2005	19	2	2
3123.3	**Naturopaths**					
	Naturopathic Doctor	IMS	FEB 2005	18	2	3
3131.1	**Community Pharmacists and Hospital Pharmacists**					
	Pharmacist	MID	MAR 2005	16	2	3
3132	**Dietitians and Nutritionists**					
	Dietitian	DIS	MAR 2003	16	2	2
3141.1	**Audiologists**					
	Audiologist	OIS	DEC 2004	17	2	2
3141.2	**Speech-Language Pathologists**					
	Speech-Language Pathologist	MIS	DEC 2004	17	2	2
3142	**Physiotherapists**					
	Physiotherapist	MIS	FEB 2005	17	2	4
3143	**Occupational Therapists**					
	Occupational Therapist	SIM	FEB 2005	15	2	4
3144	**Other Professional Occupations in Therapy and Assessment**					
	Athletic Therapist	SIM	MAR 2005	15	2	4
	Expressive Arts Therapists	SIM	JAN 2005	17	2	1
	Recreation Therapist	SIM	FEB 2005	13	2	3
3152	**Registered Nurses**					
	Nurse Practitioner	SMD	OCT 2004	17	2	3
3152.1	**General Duty Registered Nurses**					
	Registered Nurse	SMD	SEP 2004	14	2	4
3152.2	**Occupational Health Nurses**					
	Occupational Health Nurse	SMD	SEP 2004	14	2	3
3152.3	**Community Health Nurses**					
	Community Health Nurse	DMD	SEP 2004	14	2	2
3152.4	**Psychiatric Nurses**					
	Psychiatric Nurse	SMD	SEP 2004	13	2	4
3211.1	**Medical Laboratory Technologists**					
	Combined Laboratory and X-Ray Technologist	MIO	FEB 2005	13	2	4
	Medical Laboratory Technologist	MIO	FEB 2005	13	2	3
3213	**Veterinary and Animal Health Technologists and Technicians**					
	Animal Health Technologist	MOI	FEB 2005	13	3	4
3214.1	**Respiratory Therapists**					
	Respiratory Therapist	OMi	JAN 2005	14	2	3
3215	**Medical Radiation Technologists**					
	Magnetic Resonance Technologist	OMI	JUL 2005	13	2	4

Profile Title (within NOC group)		Interest Code	Production Date	Education Level	Outlook Level	Lifting Level
3215.1	**Radiological Technologists**					
	Combined Laboratory and X-Ray Technologist	OMi	FEB 2005	13	2	4
	Radiological Technologist	OMi	JAN 2005	13	2	3
3215.2	**Nuclear Medicine Technologists**					
	Nuclear Medicine Technologist	OMi	NOV 2004	13	2	4
3215.3	**Radiation Therapists**					
	Radiation Therapist	OMi	DEC 2004	13	2	3
3216	**Medical Sonographers**					
	Diagnostic Medical Sonographer	OMi	DEC 2004	14	2	3
3217	**Cardiology Technologists**					
	Cardiology Technologist	OMi	NOV 2004	12	2	4
3218.1	**Electroencephalographic Technologists**					
	Electroneurophysiology (ENP) Technologist	OMi	NOV 2004	13	2	3
3219.3	**Prosthetists and Orthotists**					
	Prosthetist and Orthotist	OID	MAR 2005	13	2	4
3219.4	**Prosthetic and Orthotic Technicians**					
	Prosthetic/Orthotic Technician	OIM	MAR 2005	13	2	4
3221	**Denturists**					
	Denturist	MOI	NOV 2004	13	3	2
3222.1	**Dental Hygienists**					
	Dental Hygienist	MOS	NOV 2004	14	3	3
3223.1	**Dental Technologists and Technicians**					
	Dental Technologist	MOI	DEC 2004	13	3	4
3231	**Opticians**					
	Optician	OMS	FEB 2005	4	3	2
3232.1	**Midwives**					
	Midwife	SID	JAN 2005	15	3	4
3232.2	**Acupuncturists**					
	Acupuncturist	SIM	MAR 2005	14	3	3
3232.4	**Herbalists**					
	Herbalist	SID	JAN 2005	1	3	3
3232.5	**Homeopaths**					
	Homeopath	SID	OCT 2004	16	3	2
3232.6	**Reflexologists**					
	Reflexologist	SIM	NOV 2004	1	3	2
3233.1	**Licensed Practical Nurses**					
	Licensed Practical Nurse	MSO	SEP 2004	12	2	4
	Licensed Practical Nurse (Advanced Orthopaedic Specialty)	MSO	SEP 2004	13	2	4
3234	**Ambulance Attendants and Other Paramedical Occupations**					
	Emergency Medical Responder	IMO	NOV 2004	4	3	4
	Emergency Medical Technician - Ambulance	IMO	NOV 2004	12	3	4
	Emergency Medical Technologist - Paramedic	IMO	NOV 2004	13	3	4
3235.1	**Audio Prosthetists**					
	Hearing Aid Practitioner	MSO	SEP 2003	13	3	2
3235.3	**Communication Assistants**					
	Speech-Language Pathologist Assistant	MSO	DEC 2004	1	3	2
3235.4	**MassageTherapists**					
	Massage Therapist	MSO	NOV 2004	1	3	3
3235.5	**Ophthalmic Medical Assistants**					
	Ophthalmic Assistant	MSO	JAN 2005	4	3	2
3411	**Dental Assistants**					
	Dental Assistant	MSO	OCT 2004	12	2	2
3413	**Nurse Aides, Orderlies and Patient Service Associates**					
	Personal Care Attendant	SMo	JAN 2005	2	3	4
	Psychiatric Aide	SMo	FEB 2005	1	2	4

Profile Title (within NOC group)		Interest Code	Production Date	Education Level	Outlook Level	Lifting Level
3414.2	**Therapy Assistants**					
	Chiropractic Assistant	MSo	DEC 2004	4	3	3
	Occupational Therapist Assistant	MSo	DEC 2004	13	3	4
	Physical Therapy Assistant	MSo	DEC 2004	1	3	4
3414.3	**Optical/Ophthalmic Laboratory Technicians and Assistants**					
	Optical Technician	OMi	FEB 2005	1	3	2
3414.4	**Pharmacy Assistants**					
	Pharmacy Assistant/Technician	MIO	JAN 2005	1	3	3
3414.5	**Central Supply Aides**					
	Sterile Processing Technician	OMi	AUG 2003	4	3	3
4111	**Judges**					
	Judge	DMI	JUL 2003	18	1	2
4112	**Lawyers and Quebec Notaries**					
	Lawyer	MID	NOV 2005	17	3	2
4121	**University Professors**					
	University Professor	IDS	NOV 2005	19	3	2
4131	**College and Other Vocational Instructors**					
	College, Technical or Vocational Instructor	IDS	NOV 2005	13	3	2
	English as a Second Language Teacher - Adults	IDS	NOV 2005	1	3	2
	Environmental Education Specialist	IDS	OCT 2005	15	3	2
4141	**Secondary School Teachers**					
	Career and Technology Studies Teacher	SID	JAN 2006	15	3	2
	Secondary School Teacher	SID	JAN 2006	15	3	2
4142	**Elementary School and Kindergarten Teachers**					
	Elementary School Teacher	SID	JAN 2006	15	3	2
	Special Needs Teacher	SID	JAN 2006	15	3	2
4143	**Educational Counsellors**					
	Educational Counsellor	SId	JAN 2006	17	3	2
4151	**Psychologists**					
	Psychologist	SIM	JUL 2005	17	3	2
4152	**Social Workers**					
	Social Worker	SID	DEC 2005	13	3	2
4153	**Family, Marriage and Other Related Counsellors**					
	Addictions Counsellor		DEC 2005	13	3	2
	Family/Marriage Counsellor	SId	DEC 2005	17	3	2
4154	**Ministers of Religion**					
	Religious Leader	SMI	NOV 2002	1	4	2
4155.1	**Probation and Parole Officers**					
	Parole/Probation Officer	SMD	APR 2003	13	3	2
4155.2	**Classification Officers, Correctional Institutions**					
	Correctional Services Worker	SMI	APR 2003	13	3	3
4161.1	**Ergonomists**					
	Ergonomist	IDM	JAN 2006	15	3	2
4161.2	**Occupational/Industrial Hygienists**					
	Occupational Hygienist	IDM	MAR 2005	15	3	2
4162	**Economists and Economic Policy Researchers and Analysts**					
	Economist	IMD	NOV 2005	17	3	2
4163	**Business Development Officers and Marketing Researchers and Consultants**					
	Market Research Analyst	DIS	OCT 2005	1	2	2

Profile Title (within NOC group)		Interest Code	Production Date	Education Level	Outlook Level	Lifting Level
4164.2	**Home Economists**					
	Home Economist	IDS	MAR 2005	15	4	3
	Human Ecologist	IDS	JAN 2006	15	4	2
4167.1	**Kinesiologists**					
	Kinesiologist	SDI	MAR 2005	15	3	4
4167.5	**Recreation and Sports Program Supervisors**					
	Recreation Co-ordinator/Supervisor	SDI	MAR 2005	13	3	4
4168	**Program Officers Unique to Government**					
	Foreign Service Officer	DIS	MAY 2003	17	4	2
4169.1	**Anthropologists**					
	Anthropologist	IDM	NOV 2005	15	3	2
4169.2	**Archaeologists**					
	Archaeologist	IDM	NOV 2005	15	3	3
4169.3	**Geographers**					
	Geographer	IDM	AUG 2005	15	3	2
4169.4	**Historians**					
	Historian	IDM	NOV 2005	17	3	2
4169.5	**Linguists**					
	Linguist	IDM	NOV 2005	15	3	2
4169.6	**Political Scientists**					
	Political Scientist	IDM	JAN 2006	17	3	2
4169.8	**Sociologists**					
	Sociologist	IDM	NOV 2005	17	3	2
4169.9	**Other Social Science Professionals**					
	Gerontological Specialist	IDM	NOV 2004	1	3	2
4211.1	**Legal Assistants and Paralegals in Law Firms**					
	Judicial Clerk	MSI	OCT 2005	4	3	2
	Land Titles Examiner	MSI	MAY 2003	4	3	2
	Paralegal	MSI	OCT 2005	13	3	2
4212	**Community and Social Service Workers**					
	Child and Youth Care Worker	SMi	NOV 2005	12	3	4
	Community Health Representative	SMi	APR 2005	12	3	2
	Life Skills Coach	SMi	SEP 2003	1	3	2
	Mental Health Worker	SMi	JUN 2005	13	3	2
	Rehabilitation Practitioner	SMi	FEB 2005	13	3	2
	Volunteer Manager	SMi	FEB 2005	1	3	2
4213	**Employment Counsellors**					
	Career Development Professional	SMI	NOV 2005	1	3	2
4214.1	**Early Childhood Educators**					
	Early Childhood Educator	SMd	NOV 2005	12	3	4
4216.1	**Driving Instructors**					
	Driving Instructor	SDM	OCT 2003	1	4	2
5111	**Librarians**					
	Librarian	MSd	DEC 2005	17	4	2
5112.1	**Conservators**					
	Conservator	Dim	MAY 2003	15	4	4
5112.2	**Curators**					
	Curator	DMI	SEP 2003	15	4	4
5113	**Archivists**					
	Archivist	MIS	DEC 2005	17	4	2
5121.1	**Creative Writers**					
	Creative Writer	IMd	MAY 2005	1	3	2
5121.2	**Technical Writers**					
	Technical Writer	IMo	JUN 2005	1	3	2
5121.3	**Copywriters**					
	Advertising Copywriter	IMd	MAY 2005	1	3	2

Profile Title (within NOC group)		Interest Code	Production Date	Education Level	Outlook Level	Lifting Level
5122	**Editors**					
	Editor	DIS	JUL 2005	15	3	2
5123	**Journalists**					
	Critic	ISM	MAY 2005	1	4	2
	Reporter	ISM	MAY 2005	13	4	2
5124	**Professional Occupations in Public Relations and Communications**					
	Fundraiser	IMS	FEB 2005	1	3	2
	Public Relations Representative	IMS	DEC 2005	13	3	2
5125.1	**Translators**					
	Translator	MId	MAR 2005	15	2	2
5125.3	**Interpreters**					
	Interpreter	MIs	MAR 2005	15	2	2
	Sign Language Interpreter	MIs	MAR 2005	13	2	2
5131.1	**Film, Radio and Television Producers**					
	Producer - Film, Radio, Television and Theatre	IDS	MAY 2003	1	3	2
5131.2	**Directors**					
	Film Director	IDS	OCT 2003	15	3	2
	Theatre Director	IDS	SEP 2003	15	3	2
5131.3	**Choreographers**					
	Choreographer	IDS	JUL 2003	1	3	3
5131.7	**Directors of Photography**					
	Cinematographer	DIO	MAY 2003	1	3	2
5132.1	**Conductors**					
	Choral Conductor	DIM	MAY 2003	1	3	2
	Orchestra/Band Conductor	DIM	MAY 2003	15	3	2
5132.2	**Composers**					
	Composer	IMd	MAY 2003	1	3	2
	Songwriter	IMd	MAY 2003	1	3	2
5132.3	**Arrangers**					
	Music Copyist	DIm	MAY 2003	1	3	2
	Orchestrator/Arranger	DIm	MAY 2003	1	3	2
5133.1	**Musicians**					
	Instrumental Musician	OMI	MAY 2003	1	3	3
5133.2	**Singers**					
	Singer	Mid	MAY 2003	1	3	2
5134.1	**Dancers**					
	Dancer	Mid	JUL 2003	1	3	4
5135.1	**Actors and Comedians**					
	Actor	MId	MAY 2003	1	3	3
5136.1	**Painters**					
	Painter/Printmaker	IOm	JUL 2005	1	3	2
5136.2	**Sculptors**					
	Sculptor	IOm	JUN 2005	1	3	3
5211.1	**Library Technicians and Assistants**					
	Library Technician	SMi	DEC 2005	13	4	3
5212.3	**Museum and Other Related Interpreters**					
	Heritage Interpreter	SMd	NOV 2003	13	4	2
5212.6	**Preparators and Museology Technicians**					
	Museum Technician	OMi	OCT 2003	13	4	4
5221	**Photographers**					
	Photographer	IMO	JUN 2005	1	3	3
5222	**Film and Video Camera Operators**					
	Television Camera Operator	OMI	APR 2003	13	3	4
5224	**Broadcast Technicians**					
	Broadcast Maintenance Technologist	OMi	JUL 2004	13	3	2

Profile Title (within NOC group)		Interest Code	Production Date	Education Level	Outlook Level	Lifting Level
5225	**Audio and Video Recording Technicians**					
	Recording/Sound Engineer	OMI	MAY 2003	1	3	2
	Television Audio/Video Operator	OMI	APR 2003	13	3	2
5226.3	**Gaffers and Lighting Technicians**					
	Lighting Technician	OMi	JUL 2005	1	3	4
5226.5	**Make-up Artists**					
	Make-Up Artist	OMI	MAY 2003	1	3	3
5226.7	**Settings Shop Foremen/women**					
	Casting Director	DMO	MAY 2003	1	3	2
	Stage Manager	DMO	JUN 2002	1	3	2
5231	**Announcers and Other Broadcasters**					
	Announcer	MSI	MAY 2003	12	3	3
5232.4	**Fashion Models**					
	Model	SMi	APR 2005	1	3	2
5241.1	**Graphic Designers**					
	Animator	IMS	MAY 2005	1	3	2
	Cartoonist	IMS	MAY 2005	1	3	2
	Graphic Designer	IMS	MAY 2005	13	3	2
5241.2	**Illustrators**					
	Illustrator	IMS	JUN 2005	1	3	2
5242	**Interior Designers**					
	Interior Designer	IMS	MAR 2005	15	3	2
5243.1	**Theatre Designers**					
	Costume Designer	IMD	FEB 2004	1	3	2
	Lighting Designer	IMD	FEB 2004	1	3	2
	Set Designer	IMD	FEB 2004	1	3	2
5243.2	**Fashion Designers**					
	Fashion Designer	IMD	APR 2005	12	3	2
5243.3	**Exhibit Designers**					
	Exhibit Designer	IMD	OCT 2003	1	3	3
	Visual Merchandiser	IMD	MAY 2003	1	3	2
5244	**Artisans and Craftspersons**					
	Craftsperson	IOM	OCT 2003	1	3	2
5251	**Athletes**					
	Professional Athlete	Mdi	MAR 2005	1	3	4
5252.1	**Coaches**					
	Coach	DSM	MAR 2005	1	3	2
5253	**Sports Officials and Referees**					
	Sports Official	MDs	MAR 2005	1	3	2
5254	**Program Leaders and Instructors in Recreation and Sport**					
	Fitness Instructor	MSi	MAR 2005	4	2	4
	Golf Professional	MSi	MAR 2005	14	2	4
	Sports Instructor	MSi	MAR 2005	1	2	4
6212	**Food Service Supervisors**					
	Food and Beverage Service Supervisor In Formal Dining Rooms	MDs	MAR 2003	1	3	2
	Food and Nutrition Manager	MDs	MAR 2003	13	3	3
	Food Service Supervisor	MDs	MAR 2003	4	3	3
6213	**Executive Housekeepers**					
	Executive Housekeeper	MDs	MAY 2003	1	3	2
6221	**Technical Sales Specialists - Wholesale Trade**					
	Technical Sales Representative	OSi	OCT 2003	1	2	2
6231	**Insurance Agents and Brokers**					
	Insurance Agent/Broker	MSd	NOV 2005	1	3	2
6232	**Real Estate Agents and Salespersons**					
	Real Estate Agent	SMd	DEC 2005	4	3	2

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6241.1	**Executive Chefs**					
	Chef	DMI	MAR 2003	1	3	3
6242	**Cooks**					
	Cook	MOd	FEB 2006	5	3	4
6251	**Butchers and Meat Cutters - Retail and Wholesale**					
	Meat Cutter	MOd	MAY 2003	1	3	4
6252	**Bakers**					
	Baker	MOd	FEB 2006	5	4	4
6261	**Police Officers (Except Commissioned)**					
	Police Officer	MDS	APR 2003	1	3	4
6262	**Firefighters**					
	Firefighter	OMD	MAY 2003	1	4	4
6271.1	**Hairstylists**					
	Hairstylist	IOS	FEB 2006	6	4	2
6272.1	**Funeral Directors**					
	Funeral Director	DSM	NOV 2005	12	4	4
6272.2	**Embalmers**					
	Embalmer	MOd	NOV 2005	12	4	4
6411	**Sales Representatives, Wholesale Trade (Non-Technical)**					
	Auctioneer	SMd	OCT 2003	1	3	3
	Sales Representative (Wholesale, Nontechnical)	SMd	OCT 2003	4	3	3
6421	**Retail Salespersons and Sales Clerks**					
	Floral Designer	MSd	OCT 2003	1	3	4
	Interior Decorator	MSd	MAR 2005	1	3	3
	Retail Salesperson	MSd	SEP 2003	1	3	3
6431	**Travel Counsellors**					
	Travel Consultant	SMI	FEB 2005	1	4	2
6432.1	**Flight Attendants**					
	Flight Attendant	MSo	OCT 2003	4	3	4
6433.1	**Airline Passenger and Ticket Agents**					
	Airline Ticket Agent	MSO	OCT 2003	4	3	2
6434.1	**Ticket Agents and Related Clerks (Except Airline)**					
	Bus Line Ticket Agent	MSO	OCT 2003	1	3	2
6435	**Hotel Front Desk Clerks**					
	Hotel and Motel Desk Clerk	SMo	MAY 2003	4	3	2
6441.1	**Tour Guides**					
	Tour Guide	SMd	JUN 2003	1	3	2
6441.2	**Travel Guides**					
	Travel Guide	SMd	MAY 2003	1	3	4
6442	**Outdoor Sport and Recreational Guides**					
	Outdoor Sport/Recreation Guide	SMO	MAY 2005	1	3	4
6443.2	**Gambling Casino Workers**					
	Casino Dealer	SMD	SEP 2004	3	3	2
6452	**Bartenders**					
	Bartender	MSd	MAR 2003	4	3	3
6453	**Food and Beverage Servers**					
	Food and Beverage Server	MSo	MAR 2003	1	3	3
6462	**Correctional Service Officers**					
	Correctional Officer	MDs	APR 2003	4	4	4
6463.2	**By-law Enforcement Officers**					
	Bylaw Enforcement Officer	MDs	APR 2003	1	3	4
6464	**Occupations Unique to the Armed Forces**					
	Canadian Forces Personnel - Non Commissioned	MOs	JAN 2005	2	1	4

Profile Title (within NOC group)		Interest Code	Production Date	Education Level	Outlook Level	Lifting Level
6465.2	**Private Investigators**					
	Private Investigator	MIS	APR 2003	1	3	3
6471.1	**Visiting Homemakers**					
	Personal Care Attendant	SMo	JAN 2005	2	3	4
6471.2	**Housekeepers**					
	Domestic Housekeeper	MOs	JUL 2003	1	3	4
6472	**Elementary and Secondary School Teacher Assistants**					
	Educational Assistant	SMi	JAN 2006	12	3	3
6474.2	**Nannies and Live-in Caregivers**					
	Nanny	SMd	JUN 2003	1	3	4
6482.1	**Estheticians**					
	Esthetician	MSO	DEC 2003	1	4	2
6482.2	**Cosmeticians**					
	Cosmetician	MSO	FEB 2004	1	4	3
6482.3	**Electrologists**					
	Electrologist	MSO	JAN 2004	1	4	2
6482.4	**Manicurists and Pedicurists**					
	Nail Technician	MSO	DEC 2003	1	4	2
6483	**Pet Groomers and Animal Care Workers**					
	Animal Care Attendant	MOD	FEB 2005	1	3	4
	Pet Groomer	MOD	JUL 2003	1	3	4
6611	**Cashiers**					
	Cashier	MOs	OCT 2003	1	4	3
6622	**Grocery Clerks and Store Shelf Stockers**					
	Retail Shelf Stocker	Mso	SEP 2003	1	3	4
6623.1	**Direct Distributors**					
	Direct Distributor	MSd	OCT 2003	1	4	2
6623.4	**Telephone Solicitors and Telemarketers**					
	Telemarketer	Msd	NOV 2005	1	4	2
6641.2	**Kitchen Helpers**					
	Kitchen Helper and Food Assembler	OMs	MAR 2003	1	3	4
6641.3	**Food Service Helpers**					
	Food Service Helper	OMs	MAR 2003	1	3	4
6651	**Security Guards and Related Occupations**					
	Security Guard	Msd	APR 2003	1	3	3
6661	**Light Duty Cleaners**					
	Room/Housekeeping Attendant	MOi	MAR 2003	1	4	4
6662.1	**Carpet and Upholstery Cleaners**					
	Carpet and Upholstery Cleaner	OMd	JUN 2003	1	4	4
6662.5	**Vehicle Cleaners**					
	Auto Detailer	OMd	JAN 2004	3	4	3
6663	**Janitors, Caretakers and Building Superintendents**					
	Building Operator	MOI	FEB 2005	3	4	5
	Building Superintendent	MOI	DEC 2005	1	4	4
	Custodian	MOI	JUN 2003	1	4	4
6671.2	**Attendants in Amusement, Recreation and Sport**					
	Recreation Facility Operator	MOS	MAR 2005	1	3	4
6672.1	**Guest Service Attendants**					
	Guest Services Attendant	OSM	MAR 2003	1	3	4
6681.1	**Dry Cleaning and Laundry Machine Operators**					
	Dry Cleaning and Laundry Workers	OMd	SEP 2003	1	3	3
6683.3	**Funeral Attendants**					
	Funeral Attendant	OMs	NOV 2005	1	4	4

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7212	**Contractors and Supervisors, Electrical Trades and Telecommunications Occupations**					
	Electrical Contractor	Dio	FEB 2004	1	3	2
7231.1	**Machinists**					
	Machinist	OIM	FEB 2006	7	2	4
7232.1	**Tool and Die Makers**					
	Tool and Die Maker	OIM	FEB 2006	7	3	4
7241	**Electricians (Except Industrial and Power System)**					
	Electrician	Oim	FEB 2006	8	2	4
7242	**Industrial Electricians**					
	Electrician	Oim	FEB 2006	8	2	4
7243	**Power System Electricians**					
	Power System Electrician	Oim	FEB 2006	9	2	3
7244	**Electrical Power Line and Cable Workers**					
	Power Lineman	Oim	FEB 2006	9	3	4
7246	**Telecommunications Installation and Repair Workers**					
	Communication Technician	OIM	FEB 2006	8	4	4
7251	**Plumbers**					
	Plumber	Oim	FEB 2006	8	2	5
7252.1	**Steamfitters and Pipefitters**					
	Steamfitter-Pipefitter	Oim	FEB 2006	6	2	5
7252.2	**Sprinkler System Installers**					
	Sprinkler Systems Installer	Oim	FEB 2006	6	2	4
7253	**Gas Fitters**					
	Gasfitter	OMi	FEB 2006	5	3	5
7261	**Sheet Metal Workers**					
	Sheet Metal Worker	OMI	FEB 2006	9	3	4
7262	**Boilermakers**					
	Boilermaker	OMI	FEB 2006	7	2	4
7263	**Structural Metal and Platework Fabricators and Fitters**					
	Structural Steel and Plate Fitter	OMI	FEB 2006	5	2	4
7264	**Ironworkers**					
	Ironworker	OMI	FEB 2006	6	2	4
7265.1	**Welders**					
	Welder	OMI	FEB 2006	5	2	1
7266.1	**Blacksmiths**					
	Farrier	OMI	MAY 2005	1	4	4
7271	**Carpenters**					
	Carpenter	OMI	FEB 2006	5	2	4
7272	**Cabinetmakers**					
	Cabinetmaker	OMI	FEB 2006	7	3	4
7281	**Bricklayers**					
	Bricklayer	OMI	FEB 2006	5	3	4
7282	**Concrete Finishers**					
	Concrete Finisher	OMi	FEB 2006	5	3	4
7283	**Tilesetters**					
	Tilesetter	OMI	FEB 2006	5	3	5
7284.1	**Plasterers**					
	Plasterer	MOi	DEC 2003	1	3	4
7284.3	**Lathers**					
	Lather-Interior Systems Mechanic	MOi	FEB 2006	5	3	4
7291.1	**Roofers**					
	Roofer	MOi	FEB 2006	5	3	4

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7292	**Glaziers**					
	Glazier	MOI	FEB 2006	5	3	5
7293	**Insulators**					
	Insulator	MOi	FEB 2006	5	2	4
7294	**Painters and Decorators**					
	Painter and Decorator	MOi	FEB 2006	5	3	4
7295	**Floor Covering Installers**					
	Floorcovering Installer	MOi	FEB 2006	5	3	4
7311	**Construction Millwrights and Industrial Mechanics (Except Textile)**					
	Millwright	OIM	FEB 2006	7	3	4
7312	**Heavy-Duty Equipment Mechanics**					
	Agricultural Equipment Technician	OMI	FEB 2006	9	3	4
	Heavy Equipment Technician	OMI	FEB 2006	9	3	4
7313	**Refrigeration and Air Conditioning Mechanics**					
	Refrigeration and Air Conditioning Mechanic	OMI	FEB 2006	8	3	4
	Transport Refrigeration Technician	OMI	FEB 2006	9	3	4
7314	**Railway Carmen/women**					
	Railway Car Mechanic	OMI	JUN 2003	1	4	4
7315.1	**Aircraft Mechanics**					
	Aircraft Maintenance Engineer	OIM	SEP 2003	13	2	4
7318	**Elevator Constructors and Mechanics**					
	Elevator Constructor	OMI	FEB 2006	8	3	4
7321.1	**Automotive Service Technicians**					
	Automotive Service Technician	OIM	FEB 2006	6	3	4
7321.3	**Transport Truck and Trailer Mechanics**					
	Heavy Equipment Technician	OIM	FEB 2006	9	3	4
7322	**Motor Vehicle Body Repairers**					
	Auto Body Technician	OMi	FEB 2006	6	4	4
7332.1	**Small Appliance Servicers and Repairers**					
	Appliance Service Technician	OMi	FEB 2006	6	3	4
7333	**Electrical Mechanics**					
	Electrical Motor Systems Technician	OMI	FEB 2006	9	3	4
7334	**Motorcycle and Other Related Mechanics**					
	Motorcycle Mechanic	OMi	FEB 2006	5	3	4
7335	**Other Small Engine and Equipment Mechanics**					
	Outdoor Power Equipment Technician	OMi	FEB 2006	9	3	5
7341	**Upholsterers**					
	Upholsterer	OMI	DEC 2003	3	4	4
7344.1	**Jewellers and Related Workers**					
	Gemmologist	OIM	APR 2003	4	4	2
	Jeweller	OIM	APR 2003	1	4	2
7344.2	**Watch Repairers**					
	Watch Repairer	OIM	APR 2003	1	4	2
7351	**Stationary Engineers and Auxiliary Equipment Operators**					
	Building Operator	Oim	FEB 2005	3	4	5
	Power Engineer	Oim	JUL 2005	1	3	4
7371	**Crane Operators**					
	Crane and Hoisting Equipment Operator	OMi	FEB 2006	6	2	5
7372.2	**Blasters - Surface Mining, Quarrying and Construction**					
	Blaster	OID	MAR 2005	1	2	4

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7373	**Water Well Drillers**					
	Water Well Driller	OMi	FEB 2006	5	2	5
7381	**Printing Press Operators**					
	Printing Press Operator	MOd	DEC 2005	4	4	4
7382	**Commercial Divers**					
	Commercial Diver	OIM	AUG 2005	12	3	4
7383.2	**Locksmiths**					
	Locksmith	OMi	FEB 2006	6	4	3
7383.3	**Recreational Vehicle Repairers**					
	Recreation Vehicle Service Technician	OIM	FEB 2006	6	4	5
7383.5	**Saw Fitters**					
	Sawfiler	OMi	FEB 2006	6	4	5
7411.1	**Long-Haul Truck Drivers**					
	Truck Driver	MOd	OCT 2003	1	3	3
7411.2	**Line-Haul and Local Truck Drivers**					
	Municipal Recycling Truck Driver	MOd	JUN 2003	1	3	4
7412.1	**Bus and Streetcar Drivers**					
	Bus Driver	OMS	SEP 2003	1	3	4
7413.1	**Taxi and Limousine Drivers**					
	Taxi Driver	OMS	JUL 2003	1	3	4
7413.2	**Chauffeurs**					
	Chauffeur	OMS	OCT 2003	1	3	4
7414	**Delivery and Courier Service Drivers**					
	Vending Machine Route Worker	MOs	MAR 2005	4	3	4
7421	**Heavy Equipment Operators (Except Crane)**					
	Heavy Equipment Operator	OMi	DEC 2003	1	2	3
	Surface Mining Equipment Operator	OMi	AUG 2005	1	2	4
7422	**Public Works Maintenance Equipment Operators**					
	Refuse Truck Driver	OMi	JUN 2003	1	4	4
7437	**Air Transport Ramp Attendants**					
	Station Attendant/Ramp Service Agent	MOi	OCT 2003	4	3	4
7442.2	**Gas Maintenance Workers**					
	Gas Utility Operator	MOi	FEB 2006	10	4	4
7444	**Pest Controllers and Fumigators**					
	Pest Control Operator	OMi	MAR 2005	1	4	4
7445	**Other Repairers and Servicers**					
	Musical Instrument Repair Technician	OMi	MAY 2003	4	3	3
	Vending Machine Repairer	OMi	JAN 2004	4	3	4
7452.1	**Material Handlers (manual)**					
	Furniture Mover	MOi	OCT 2003	1	3	4
7452.2	**Material Handlers (equipment operators)**					
	Warehousing Professionals	OMi	FEB 2006	10	3	4
7611	**Construction Trades Helpers and Labourers**					
	Construction Craft Labourer	MOi	FEB 2006	11	3	4
7621	**Public Works and Maintenance Labourers**					
	Refuse Collector	Moi	JUN 2003	1	4	4
8222	**Supervisors, Oil and Gas Drilling and Service**					
	Drilling and Service Rig Managers	Dio	AUG 2005	4	2	4
	Wireline Field Supervisor	Dio	SEP 2005	1	2	2
8231	**Underground Production and Development Miners**					
	Underground Miner	OIM	AUG 2005	1	4	4

Profile Title (within NOC group)		Interest Code	Production Date	Education Level	Outlook Level	Lifting Level
8232.1	**Oil and Gas Well Drillers and Well Servicers**					
	Rig Technician	ODm	JUL 2005	9	2	4
8232.2	**Oil and Gas Well Loggers, Testers and Related Workers**					
	Oil and Gas Well Loggers and Testers	OMi	AUG 2005	1	2	4
8241.1	**Cable Yarding System Operators**					
	Logging/Forestry Equipment Operators	Omi	JAN 2006	1	4	3
8251	**Farmers and Farm Managers**					
	Beekeeper	DMO	MAR 2005	1	4	4
	Dairy Producer	DMO	FEB 2005	1	4	4
	Grain and Forage Crop Producer	DMO	FEB 2005	1	4	4
	Livestock/Poultry Producer	DMO	MAR 2005	1	4	4
	Market Gardener	DMO	MAR 2005	1	4	4
8252	**Agricultural and Related Service Contractors and Managers**					
	Seed Cleaning/Conditioning Plant Manager	OMi	MAR 2005	1	4	2
8253.2	**Specialized Livestock Workers**					
	Swine Technician	MId	FEB 2005	3	4	4
8254	**Nursery and Greenhouse Operators and Managers**					
	Greenhouse Operator	DMS	DEC 2003	13	4	2
	Nursery Operator	DMS	DEC 2003	13	4	3
8412.1	**Oil and Gas Well Drilling Workers**					
	Drilling Rig Leasehand/Floorhand	OMd	JUL 2005	3	2	5
	Rig Technician	OMd	JUL 2005	9	2	4
	Service Rig Personnel	OMd	JUL 2005	3	2	5
8412.2	**Oil and Gas Well Services Operators**					
	Well Service Equipment Operator	OMi	JUL 2005	4	2	4
8422	**Silviculture and Forestry Workers**					
	Wildland Firefighter	OMi	FEB 2004	1	4	5
8431	**General Farm Workers**					
	Farm Worker/Technician	MOi	FEB 2005	1	4	4
8615	**Oil and Gas Drilling, Servicing and Related Labourers**					
	Seismic Worker	MOi	SEP 2005	1	2	4
9232	**Petroleum, Gas and Chemical Process Operators**					
	Field Production Operator	Old	AUG 2005	1	2	4
	Gas Pipeline Operators and Maintenance Workers	Old	AUG 2005	4	2	4
	Gas Plant Operator	Old	AUG 2005	1	2	4
	Oil Pipeline Operators and Maintenance Workers	Old	AUG 2005	4	2	4
	Refinery/Upgrader Process Operator	Old	AUG 2005	12	2	4
9424.1	**Water Plant Operators**					
	Water and Wastewater Treatment Plant Operator	OIM	FEB 2003	4	4	4
9424.2	**Waste Plant Operators**					
	Water and Wastewater Treatment Plant Operator	OIM	FEB 2003	4	4	4
9431	**Sawmill Machine Operators**					
	Sawmill Machine Operator	OMi	DEC 2005	1	4	4
9432	**Pulp Mill Machine Operators**					
	Pulpmill Operator	OMi	OCT 2005	4	4	3

Profile Title (within NOC group)		Interest Code	Production Date	Education Level	Outlook Level	Lifting Level
9461.2	**Machine Operators, Food and Beverage Processing**					
	Agricultural Products Processing Machine Operator	OMi	FEB 2005	1	3	4
	Feed Mill Production Worker	OMi	MAR 2005	1	3	4
9471	**Printing Machine Operators**					
	Digital Printing Machine Operator	MOI	DEC 2005	1	4	4
9472.5	**Pre-press Technicians**					
	Pre-Press Technician	OMI	DEC 2005	4	3	2
9473.1	**Binding and Finishing Machine Operators**					
	Binding and Finishing Machine Operators	OMi	DEC 2005	1	4	4
9473.2	**Specialty Finishing Equipment Operators**					
	Binding and Finishing Machine Operators	OMi	DEC 2005	1	4	4
9474	**Photographic and Film Processors**					
	Photographic Processing Technician	OMI	MAY 2005	1	4	2
9482.1	**Motor Vehicle Assemblers**					
	Automobile Accessories Installer	OMi	SEP 2003	1	3	4
9483.1	**Electronics Assemblers**					
	Electronics Assemblers and Fabricators	OMi	SEP 2003	1	2	2
9619	**Other Labourers in Processing, Manufacturing and Utilities**					
	Municipal Recycling Waste Handler	MOi	JUN 2003	1	4	4

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Occupational Profiles by Primary Interest

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Occupational Profile Title	NOC Number	Interest Code	Production Date	Education Level	Outlook Level	Lifting Level
D : Directive						
Accommodation Manager	0632	DMS	MAR 2003	13	3	2
Banking/Investment Manager	0122.1	DMs	DEC 2005	13	3	2
Banquet Manager	0631	DMS	FEB 2004	1	3	2
Beekeeper	8251	DMO	MAR 2005	1	4	4
Canadian Forces Personnel - Commissioned Officer	0643	DMs	JAN 2005	1	1	1
Casting Director	5226.7	DMO	MAY 2003	1	3	2
Caterer	0631	DMS	FEB 2004	1	3	4
Chef	6241.1	DMI	MAR 2003	1	3	3
Choral Conductor	5132.1	DIM	MAY 2003	1	3	2
Cinematographer	5131.7	DIO	MAY 2003	1	3	2
Coach	5252.1	DSM	MAR 2005	1	3	2
Community Health Nurse	3152.3	DMD	SEP 2004	14	2	2
Conservation Officer	2224	DMS	JAN 2006	15	4	3
Conservator	5112.1	Dim	MAY 2003	15	4	4
Credit/Loans Manager	0122.2	DMS	NOV 2005	1	3	2
Curator	5112.2	DMI	SEP 2003	15	4	4
Dairy Producer	8251	DMO	FEB 2005	1	4	4
Dietitian	3132	DIS	MAR 2003	16	2	2
Drilling and Service Rig Managers	8222	Dio	AUG 2005	4	2	4
Editor	5122	DIS	JUL 2005	15	3	2
Electrical Contractor	7212	Dio	FEB 2004	1	3	2
Fish and Wildlife Officer	2224	DMS	JAN 2006	14	4	3
Foreign Service Officer	4168	DIS	MAY 2003	17	4	2
Forest Technician	2223	DMI	JAN 2006	12	3	3
Forest Technologist	2223	DMI	JAN 2006	13	3	2
Funeral Director	6272.1	DSM	NOV 2005	12	4	4
Grain and Forage Crop Producer	8251	DMO	FEB 2005	1	4	4
Greenhouse Operator	8254	DMS	DEC 2003	13	4	2
Health Service Administrator	0311	DMI	FEB 2005	1	3	2
Judge	4111	DMI	JUL 2003	18	1	2
Livestock/Poultry Producer	8251	DMO	MAR 2005	1	4	4
Market Gardener	8251	DMO	MAR 2005	1	4	4
Market Research Analyst	4163	DIS	OCT 2005	1	2	2
Marketing Manager	0611.2	DSI	OCT 2005	13	3	2
Municipal Administrator	0414	DIM	JUN 2003	13	4	2
Music Copyist	5132.3	DIm	MAY 2003	1	3	2
Nursery Operator	8254	DMS	DEC 2003	13	4	3
Operations Manager	0911	DIM	JAN 2006	1	3	2
Orchestra/Band Conductor	5132.1	DIM	MAY 2003	15	3	2
Orchestrator/Arranger	5132.3	DIm	MAY 2003	1	3	2
Park Warden	2224	DMS	JAN 2006	15	4	4
Recreation and Sport Administrator	0513	DMI	MAR 2005	15	3	2
Restaurant Manager	0631	DMS	MAR 2003	1	3	2
Retail Store Manager	0621	DMi	OCT 2003	1	4	2
School Business Official	0313.2	DMs	DEC 2003	1	3	2
Special Event Co-ordinator	1226	DSI	APR 2003	13	3	2
Stage Manager	5226.7	DMO	JUN 2002	1	3	2
Traffic Manager	0713.1	DMs	OCT 2003	1	2	2
Wireline Field Supervisor	8222	Dio	SEP 2005	1	2	2

Occupational Profile Title	NOC Number	Interest Code	Production Date	Education Level	Outlook Level	Lifting Level
I : Innovative						
Actuary	2161.3	IMD	NOV 2005	15	3	2
Advertising Account Executive	1122.2	ISD	FEB 2004	1	2	2
Advertising Copywriter	5121.3	IMd	MAY 2005	1	3	2
Aerospace Engineer	2146	IOD	JUN 2004	15	3	1
Agricultural Engineer	2148.1	IOD	JUN 2004	15	3	4
Agrologist	2123	ISD	AUG 2005	15	3	2
Animator	5241.1	IMS	MAY 2005	1	3	2
Anthropologist	4169.1	IDM	NOV 2005	15	3	2
Arbitrator	1121	IMS	OCT 2005	1	3	2
Archaeologist	4169.2	IDM	NOV 2005	15	3	3
Architect	2151	ISD	MAR 2005	17	3	2
Architectural Technologist	2251	IMO	MAR 2005	13	3	2
Astronomer	2111.2	IOD	JAN 2006	17	3	2
Biochemist	2112	IOD	SEP 2005	15	3	2
Biologist	2121.1	IOD	JAN 2005	15	3	2
Biotechnologist	2121.2	IOD	SEP 2005	15	3	2
Cartoonist	5241.1	IMS	MAY 2005	1	3	2
Chemical Engineer	2134	IOD	JUN 2004	15	2	4
Chemist	2112	IOD	JUL 2004	15	3	2
Chiropractor	3122	ISM	DEC 2004	18	2	4
Choreographer	5131.3	IDS	JUL 2003	1	3	3
Civil Engineer	2131	IOD	JUN 2004	15	2	1
Civil Engineering Technologist	2231.1	IMd	JUN 2004	13	2	3
College, Technical or Vocational Instructor	4131	IDS	NOV 2005	13	3	2
Composer	5132.2	IMd	MAY 2003	1	3	2
Computer Engineer	2147.1	IOD	JUL 2004	15	3	3
Computer Programmer	2174.1	IMD	JUL 2004	1	2	2
Costume Designer	5243.1	IMD	FEB 2004	1	3	2
Craftsperson	5244	IOM	OCT 2003	1	3	2
Creative Writer	5121.1	IMd	MAY 2005	1	3	2
Critic	5123	ISM	MAY 2005	1	4	2
Data Administrator	2172.2	IMD	JUL 2004	13	2	2
Database Analyst	2172.1	IMD	JUL 2004	13	2	2
Demographer	2161.2	IMD	DEC 2005	17	3	2
Dentist	3113	IOs	NOV 2004	17	2	2
Ecologist	2121.1	IOD	SEP 2005	17	3	2
Economist	4162	IMD	NOV 2005	17	3	2
Electrical Engineer	2133	IOD	AUG 2004	15	2	3
Emergency Medical Responder	3234	IMO	NOV 2004	4	3	4
Emergency Medical Technician - Ambulance	3234	IMO	NOV 2004	12	3	4
Emergency Medical Technologist - Paramedic	3234	IMO	NOV 2004	13	3	4
English as a Second Language Teacher - Adults	4131	IDS	NOV 2005	1	3	2
Entomologist	2121.1	IOD	SEP 2005	15	3	2
Environmental Education Specialist	4131	IDS	OCT 2005	15	3	2
Environmental Engineer	2131	IOD	JUN 2004	15	2	2
Ergonomist	4161.1	IDM	JAN 2006	15	3	2
Exhibit Designer	5243.3	IMD	OCT 2003	1	3	3
Exploration Geophysicist	2113	IOD	JUN 2004	15	3	4
Fashion Designer	5243.2	IMD	APR 2005	12	3	2
Film Director	5131.2	IDS	OCT 2003	15	3	2
Food Scientist	2121.1	IOD	MAR 2005	15	3	2
Forester	2122	ISD	JAN 2006	15	3	2
Fundraiser	5124	IMS	FEB 2005	1	3	2
Geneticist	2121.2	IOD	NOV 2005	17	3	2
Geographer	4169.3	IDM	AUG 2005	15	3	2

Occupational Profile Title	NOC Number	Interest Code	Production Date	Education Level	Outlook Level	Lifting Level
Geologist	2113	IOD	JUN 2004	15	3	2
Geomatics/Surveying Engineer	2131	IOD	JUL 2004	15	2	4
Geriatric Medicine Specialist	3111.1	ISD	DEC 2004	19	2	2
Gerontological Specialist	4169.9	IDM	NOV 2004	1	3	2
Graphic Designer	5241.1	IMS	MAY 2005	13	3	2
Hairstylist	6271.1	IOS	FEB 2006	6	4	2
Historian	4169.4	IDM	NOV 2005	17	3	2
Home Economist	4164.2	IDS	MAR 2005	15	4	3
Human Ecologist	4164.2	IDS	JAN 2006	15	4	2
Hydrologist	2113	IOD	SEP 2005	15	3	4
Illustrator	5241.2	IMS	JUN 2005	1	3	2
Industrial Designer	2252	IMO	JUL 2005	1	4	2
Industrial Engineer	2141	IOD	JUN 2004	15	3	2
Industrial Engineering Technologist	2233.1	IMd	OCT 2004	13	3	2
Information Systems Consultant	2171.1	IMD	JUL 2004	15	2	2
Information Systems Quality Assurance Analyst	2171.3	IMD	JUL 2004	13	2	2
Interactive Media Developer	2174.2	IMD	JUL 2004	13	2	2
Interior Designer	5242	IMS	MAR 2005	15	3	2
Interpretive Naturalist	2121.1	IOD	NOV 2003	13	3	2
Investment Advisor	1113.1	ISM	NOV 2005	13	3	2
Land Surveyor	2154	IOD	JUL 2004	15	3	3
Landscape Architect	2152	ISD	MAR 2005	15	3	2
Lighting Designer	5243.1	IMD	FEB 2004	1	3	2
Linguist	4169.5	IDM	NOV 2005	15	3	2
Management Consultant	1122.1	IDS	NOV 2005	17	2	2
Manufacturing Engineer	2141	IOD	JUN 2004	15	3	2
Mapping Technologist	2255.1	IMO	APR 2005	13	3	2
Materials Engineering Technologist	2233.1	IMd	JUL 2004	13	3	4
Materials/Metallurgical Engineer	2142	IOD	JUL 2004	15	3	3
Mathematician	2161.1	IMD	NOV 2005	15	3	2
Mechanical Engineer	2132	IOD	SEP 2004	15	2	2
Mediator	1121	IMS	OCT 2005	1	3	2
Meteorologist	2114	IOD	OCT 2005	15	3	2
Microbiologist	2121.2	IOD	SEP 2005	15	3	2
Mining Engineer	2143	IOD	JUL 2004	15	3	3
Naturopathic Doctor	3123.3	IMS	FEB 2005	18	2	3
Occupational Hygienist	4161.2	IDM	MAR 2005	15	3	2
Oceanographer	2113	IOD	OCT 2005	17	3	2
Operations Research Analyst	2161.2	IMD	JAN 2006	15	3	2
Painter/Printmaker	5136.1	IOm	JUL 2005	1	3	2
Pathologist	3111.2	IOD	DEC 2004	19	2	2
Pediatrician	3111.1	ISD	NOV 2004	19	2	3
Petroleum Engineer	2145	IOD	JUN 2004	15	2	3
Pharmacologist	2121.2	IOD	FEB 2005	15	3	2
Photographer	5221	IMO	JUN 2005	1	3	3
Physician	3112	ISD	NOV 2004	19	2	3
Physicist	2111.1	IOD	DEC 2005	15	3	2
Physiologist	2121.1	IOD	APR 2005	19	3	2
Podiatrist	3123.1	IMO	FEB 2005	19	2	2
Political Scientist	4169.6	IDM	JAN 2006	17	3	2
Private Trainer/Facilitator	1121	IMS	NOV 2005	1	3	2
Producer - Film, Radio, Television and Theatre	5131.1	IDS	MAY 2003	1	3	2
Psychiatrist	3111.1	ISD	OCT 2004	19	2	2
Public Relations Representative	5124	IMS	DEC 2005	13	3	2
Reporter	5123	ISM	MAY 2005	13	4	2
Sculptor	5136.2	IOm	JUN 2005	1	3	3
Set Designer	5243.1	IMD	FEB 2004	1	3	2
Sociologist	4169.8	IDM	NOV 2005	17	3	2

Occupational Profile Title	NOC Number	Interest Code	Production Date	Education Level	Outlook Level	Lifting Level
Software Engineer	2173	IMD	JUL 2004	15	2	2
Soil Scientist	2115.2	IOD	SEP 2005	15	3	2
Songwriter	5132.2	IMd	MAY 2003	1	3	2
Sport Medicine Physician	3112	ISD	DEC 2004	19	2	3
Statistician	2161.2	IMD	DEC 2005	15	3	2
Technical Writer	5121.2	IMo	JUN 2005	1	3	2
Theatre Director	5131.2	IDS	SEP 2003	15	3	2
Toxicologist	2121.2	IOD	FEB 2005	15	3	2
University Professor	4121	IDS	NOV 2005	19	3	2
Urban, Regional and Park Planners	2153	ISD	JUN 2003	15	2	2
Veterinarian	3114	IOs	MAR 2005	17	3	4
Visual Merchandiser	5243.3	IMD	MAY 2003	1	3	2
Web Designer	2175	IMD	JUL 2004	13	2	2
Webmaster	2175	IMD	JUL 2004	13	2	2
M : Methodical						
Aboriginal Liaison	1221	MDS	MAR 2005	1	3	2
Accountant	1111.2	MID	NOV 2005	15	3	2
Accounting Technician	1231	MDi	OCT 2005	4	3	2
Actor	5135.1	MId	MAY 2003	1	3	3
Agricultural Commodity Inspector	2222.2	Mid	FEB 2005	1	3	3
Airline Ticket Agent	6433.1	MSO	OCT 2003	4	3	2
Animal Care Attendant	6483	MOD	FEB 2005	1	3	4
Animal Health Technologist	3213	MOI	FEB 2005	13	3	4
Announcer	5231	MSI	MAY 2003	12	3	3
Archivist	5113	MIS	DEC 2005	17	4	2
Assessor	1235.1	Mds	DEC 2005	13	4	2
Baker	6252	MOd	FEB 2006	5	4	4
Bartender	6452	MSd	MAR 2003	4	3	3
Biological Technician	2221.2	Moi	SEP 2005	13	3	3
Building Operator	6663	MOI	FEB 2005	3	4	5
Building Superintendent	6663	MOI	DEC 2005	1	4	4
Bus Line Ticket Agent	6434.1	MSO	OCT 2003	1	3	2
Bylaw Enforcement Officer	6463.2	MDs	APR 2003	1	3	4
Call Centre Agent	1453.2	MSi	NOV 2005	1	3	2
Canadian Forces Personnel - Non Commissioned	6464	MOs	JAN 2005	2	1	4
Cashier	6611	MOs	OCT 2003	1	4	3
Chiropractic Assistant	3414.2	MSo	DEC 2004	4	3	3
Collection Agent	1435	MIs	NOV 2005	4	3	2
Combined Laboratory and X-Ray Technologist	3211.1	MIO	FEB 2005	13	2	4
Construction Craft Labourer	7611	MOi	FEB 2006	11	3	4
Cook	6242	MOd	FEB 2006	5	3	4
Correctional Officer	6462	MDs	APR 2003	4	4	4
Cosmetician	6482.2	MSO	FEB 2004	1	4	3
Custodian	6663	MOI	JUN 2003	1	4	4
Customer Support Analyst	2282	MSo	JUL 2004	1	2	2
Customs Broker	1236.1	MSd	JUN 2003	4	3	2
Customs Inspector	1228.3	MDO	MAY 2003	4	3	2
Dancer	5134.1	Mid	JUL 2003	1	3	4
Dental Assistant	3411	MSO	OCT 2004	12	2	2
Dental Hygienist	3222.1	MOS	NOV 2004	14	3	3
Dental Technologist	3223.1	MOI	DEC 2004	13	3	4
Denturist	3221	MOI	NOV 2004	13	3	2
Digital Printing Machine Operator	9471	MOI	DEC 2005	1	4	4
Direct Distributor	6623.1	MSd	OCT 2003	1	4	2
Dispatcher	1475.1	MDS	JUN 2003	1	3	2

Occupational Profile Title	NOC Number	Interest Code	Production Date	Education Level	Outlook Level	Lifting Level
Domestic Housekeeper	6471.2	MOs	JUL 2003	1	3	4
Drafting Technician	2253.2	MIO	AUG 2005	12	3	2
Electrologist	6482.3	MSO	JAN 2004	1	4	2
Embalmer	6272.2	MOd	NOV 2005	12	4	4
Engineering Design and Drafting Technologist	2253.1	MIO	AUG 2005	13	3	2
Environmental Auditor	2263	MID	SEP 2005	15	3	2
Esthetician	6482.1	MSO	DEC 2003	1	4	2
Executive Housekeeper	6213	MDs	MAY 2003	1	3	2
Farm Worker/Technician	8431	MOi	FEB 2005	1	4	4
Financial Analyst	1112.1	MId	NOV 2005	15	3	2
Financial Customer Service Representative	1433	MSo	OCT 2005	4	4	2
Financial Planner	1114.1	MID	OCT 2005	1	3	2
Fitness Instructor	5254	MSi	MAR 2005	4	2	4
Flight Attendant	6432.1	MSo	OCT 2003	4	3	4
Floorcovering Installer	7295	MOi	FEB 2006	5	3	4
Floral Designer	6421	MSd	OCT 2003	1	3	4
Food and Beverage Server	6453	MSo	MAR 2003	1	3	3
Food and Beverage Service Supervisor In Formal Dining Rooms	6212	MDs	MAR 2003	1	3	2
Food and Nutrition Manager	6212	MDs	MAR 2003	13	3	3
Food Service Supervisor	6212	MDs	MAR 2003	4	3	3
Furniture Mover	7452.1	MOi	OCT 2003	1	3	4
Gas Utility Operator	7442.2	MOi	FEB 2006	10	4	4
Glazier	7292	MOI	FEB 2006	5	3	5
Golf Professional	5254	MSi	MAR 2005	14	2	4
Hazardous Waste Management Technologist	2263	MID	SEP 2005	13	3	4
Health Information Management Professional	1413.3	Mid	OCT 2004	13	4	2
Hearing Aid Practitioner	3235.1	MSO	SEP 2003	13	3	2
Home Inspector	2264	MId	SEP 2003	1	3	3
Immigration Officer	1228.1	MDS	MAY 2003	4	3	2
Insulator	7293	MOi	FEB 2006	5	2	4
Insurance Adjuster	1233.1	MSd	NOV 2005	4	3	2
Insurance Agent/Broker	6231	MSd	NOV 2005	1	3	2
Insurance Underwriter	1234	MSd	NOV 2005	1	3	2
Interior Decorator	6421	MSd	MAR 2005	1	3	3
Internal Auditor	1111.1	Mid	NOV 2005	15	3	2
Interpreter	5125.3	MIs	MAR 2005	15	2	2
Investment Underwriter	1114.4	MID	JAN 2003	17	3	2
Judicial Clerk	4211.1	MSI	OCT 2005	4	3	2
Land Agent	1225	MDs	APR 2005	1	3	2
Land Titles Examiner	4211.1	MSI	MAY 2003	4	3	2
Lather-Interior Systems Mechanic	7284.3	MOi	FEB 2006	5	3	4
Lawyer	4112	MID	NOV 2005	17	3	2
Legal and Realtime Reporter	1244.1	MOi	OCT 2005	13	3	2
Legal Secretary	1242	MOd	OCT 2005	12	3	2
Letter Carrier	1462	Mos	NOV 2005	1	4	4
Librarian	5111	MSd	DEC 2005	17	4	2
Library Clerk	1451	MSo	DEC 2005	4	3	3
Licensed Practical Nurse	3233.1	MSO	SEP 2004	12	2	4
Licensed Practical Nurse (Advanced Orthopaedic Specialty)	3233.1	MSO	SEP 2004	13	2	4
Mail Sorter	1461.2	Mio	NOV 2005	1	4	4
Massage Therapist	3235.4	MSO	NOV 2004	1	3	3
Meat Cutter	6251	MOd	MAY 2003	1	3	4
Medical Laboratory Technologist	3211.1	MIO	FEB 2005	13	2	3
Medical Transcriptionist	1244.2	MOi	NOV 2005	12	3	2
Messenger/Courier	1463	Mos	SEP 2002	1	3	4
Mortgage Agent	1232	MSd	FEB 2005	4	3	2

Occupational Profile Title	NOC Number	Interest Code	Production Date	Education Level	Outlook Level	Lifting Level
Municipal Recycling Truck Driver	7411.2	MOd	JUN 2003	1	3	4
Municipal Recycling Waste Handler	9619	MOi	JUN 2003	1	4	4
Nail Technician	6482.4	MSO	DEC 2003	1	4	2
Occupational Health and Safety Inspector	2263	MID	MAR 2005	1	3	2
Occupational Therapist Assistant	3414.2	MSo	DEC 2004	13	3	4
Ophthalmic Assistant	3235.5	MSO	JAN 2005	4	3	2
Painter and Decorator	7294	MOi	FEB 2006	5	3	4
Paralegal	4211.1	MSI	OCT 2005	13	3	2
Parts Technician	1472	MOS	FEB 2006	6	3	3
Personal Property/Equipment Appraiser	1235.3	Mds	DEC 2003	1	4	2
Pet Groomer	6483	MOD	JUL 2003	1	3	4
Pharmacist	3131.1	MID	MAR 2005	16	2	3
Pharmacy Assistant/Technician	3414.4	MIO	JAN 2005	1	3	3
Physical Therapy Assistant	3414.2	MSo	DEC 2004	1	3	4
Physiotherapist	3142	MIS	FEB 2005	17	2	4
Plasterer	7284.1	MOi	DEC 2003	1	3	4
Police Officer	6261	MDS	APR 2003	1	3	4
Postal/Wicket Clerk	1461.1	Mis	NOV 2005	1	4	4
Printing Press Operator	7381	MOd	DEC 2005	4	4	4
Private Investigator	6465.2	MIS	APR 2003	1	3	3
Professional Athlete	5251	Mdi	MAR 2005	1	3	4
Property Manager	1224	MDs	JAN 2006	4	3	2
Public Health Inspector	2263	MID	DEC 2003	15	3	3
Purchasing Agent	1225	MDs	MAY 2003	1	3	2
Real Estate Appraiser	1235.3	Mds	JAN 2006	1	4	2
Recreation Facility Operator	6671.2	MOS	MAR 2005	1	3	4
Refuse Collector	7621	Moi	JUN 2003	1	4	4
Retail Salesperson	6421	MSd	SEP 2003	1	3	3
Retail Shelf Stocker	6622	Mso	SEP 2003	1	3	4
Roofer	7291.1	MOi	FEB 2006	5	3	4
Room/Housekeeping Attendant	6661	MOi	MAR 2003	1	4	4
Safety Codes Officer	2264	MId	MAY 2003	1	3	2
Safety Officer	2263	MID	MAR 2005	1	3	3
Security Guard	6651	Msd	APR 2003	1	3	3
Seismic Worker	8615	MOi	SEP 2005	1	2	4
Shipper and Receiver	1471	MOd	OCT 2005	1	3	4
Sign Language Interpreter	5125.3	MIs	MAR 2005	13	2	2
Singer	5133.2	Mid	MAY 2003	1	3	2
Speech-Language Pathologist	3141.2	MIS	DEC 2004	17	2	2
Speech-Language Pathologist Assistant	3235.3	MSO	DEC 2004	1	3	2
Sports Instructor	5254	MSi	MAR 2005	1	2	4
Sports Official	5253	MDs	MAR 2005	1	3	2
Station Attendant/Ramp Service Agent	7437	MOi	OCT 2003	4	3	4
Steel Detailer	2253.1	MIO	FEB 2006	10	3	2
Steel Detailer	2253.2	MIO	FEB 2006	10	3	2
Swine Technician	8253.2	MId	FEB 2005	3	4	4
Systems Auditor	2171.4	MDI	JUL 2004	15	2	2
Systems Security Analyst	2171.2	MID	JUL 2004	13	2	2
Systems Tester	2283	MOi	JUL 2004	1	2	2
Telemarketer	6623.4	Msd	NOV 2005	1	4	2
Telephone Operator	1424	MSO	SEP 2002	4	4	2
Traffic Co-ordinator	1473	MIs	MAY 2003	4	3	2
Translator	5125.1	MId	MAR 2005	15	2	2
Truck Driver	7411.1	MOd	OCT 2003	1	3	3
Utility Clerk	1453.2	MSi	NOV 2005	4	3	2
Vending Machine Route Worker	7414	MOs	MAR 2005	4	3	4

Occupational Profile Title	NOC Number	Interest Code	Production Date	Education Level	Outlook Level	Lifting Level
O : Objective						
Administrative Assistant	1411	OMi	OCT 2005	12	4	2
Agricultural Equipment Technician	7312	OMI	FEB 2006	9	3	4
Agricultural Products Processing Machine Operator	9461.2	OMi	FEB 2005	1	3	4
Air Traffic Controller	2272.1	OMD	OCT 2005	4	3	2
Aircraft Maintenance Engineer	7315.1	OIM	SEP 2003	13	2	4
Airline Pilot	2271.1	OID	OCT 2003	4	3	3
Appliance Service Technician	7332.1	OMi	FEB 2006	6	3	4
Arborist	2225.1	OMd	MAR 2005	1	3	4
Audiologist	3141.1	OIS	DEC 2004	17	2	2
Auto Body Technician	7322	OMi	FEB 2006	6	4	4
Auto Detailer	6662.5	OMd	JAN 2004	3	4	3
Automated Systems Technologist	2232.1	OIM	JUL 2004	13	2	4
Automobile Accessories Installer	9482.1	OMi	SEP 2003	1	3	4
Automotive Service Technician	7321.1	OIM	FEB 2006	6	3	4
Avionics Technologist	2244.3	OMi	JUN 2004	13	2	4
Binding and Finishing Machine Operators	9473.1	OMi	DEC 2005	1	4	4
Binding and Finishing Machine Operators	9473.2	OMi	DEC 2005	1	4	4
Biomedical Engineering Technologist	2241.1	OIM	JUN 2004	13	2	4
Blaster	7372.2	OID	MAR 2005	1	2	4
Boilermaker	7262	OMI	FEB 2006	7	2	4
Bricklayer	7281	OMI	FEB 2006	5	3	4
Broadcast Maintenance Technologist	5224	OMi	JUL 2004	13	3	2
Building Operator	7351	Oim	FEB 2005	3	4	5
Bus Driver	7412.1	OMS	SEP 2003	1	3	4
Cabinetmaker	7272	OMI	FEB 2006	7	3	4
Cardiology Technologist	3217	OMi	NOV 2004	12	2	4
Carpenter	7271	OMI	FEB 2006	5	2	4
Carpet and Upholstery Cleaner	6662.1	OMd	JUN 2003	1	4	4
Chauffeur	7413.2	OMS	OCT 2003	1	3	4
Chemical Engineering Technologist	2211.1	OIM	JUL 2004	13	3	2
Chemical Technologist	2211.1	OIM	JUN 2004	13	3	2
Combined Laboratory and X-Ray Technologist	3215.1	OMi	FEB 2005	13	2	4
Commercial Diver	7382	OIM	AUG 2005	12	3	4
Communication Technician	7246	OIM	FEB 2006	8	4	4
Computer and Network Operator	2281.1	OMd	JUL 2004	1	2	3
Computer Service Technician	2242	OIM	SEP 2004	1	3	4
Concrete Finisher	7282	OMi	FEB 2006	5	3	4
Crane and Hoisting Equipment Operator	7371	OMi	FEB 2006	6	2	5
Diagnostic Medical Sonographer	3216	OMi	DEC 2004	14	2	3
Drilling Rig Leasehand/Floorhand	8412.1	OMd	JUL 2005	3	2	5
Dry Cleaning and Laundry Workers	6681.1	OMd	SEP 2003	1	3	3
Electrical Engineering Technologist	2241.1	OIM	SEP 2004	13	2	4
Electrical Motor Systems Technician	7333	OMI	FEB 2006	9	3	4
Electrician	7241	Oim	FEB 2006	8	2	4
Electrician	7242	Oim	FEB 2006	8	2	4
Electroneurophysiology (ENP) Technologist	3218.1	OMi	NOV 2004	13	2	3
Electronic Technician	2242	OIM	FEB 2006	8	3	4
Electronics Assemblers and Fabricators	9483.1	OMi	SEP 2003	1	2	2
Electronics Engineering Technologist	2241.1	OIM	SEP 2004	13	2	4
Elevator Constructor	7318	OMI	FEB 2006	8	3	4
Farrier	7266.1	OMI	MAY 2005	1	4	4
Feed Mill Production Worker	9461.2	OMi	MAR 2005	1	3	4
Field Production Operator	9232	Old	AUG 2005	1	2	4
Firefighter	6262	OMD	MAY 2003	1	4	4

Occupational Profile Title	NOC Number	Interest Code	Production Date	Education Level	Outlook Level	Lifting Level
Flight Service Specialist	2272.3	OIM	OCT 2005	4	3	2
Food Science Technologist	2211.1	OIM	MAR 2005	13	3	2
Food Service Helper	6641.3	OMs	MAR 2003	1	3	4
Forensic Laboratory Analyst	2211.1	OIM	OCT 2005	13	3	2
Funeral Attendant	6683.3	OMs	NOV 2005	1	4	4
Gas Pipeline Operators and Maintenance Workers	9232	Old	AUG 2005	4	2	4
Gas Plant Operator	9232	Old	AUG 2005	1	2	4
Gasfitter	7253	OMi	FEB 2006	5	3	5
Gemmologist	7344.1	OIM	APR 2003	4	4	2
Geological and Geophysical Technologist	2212.1	Old	OCT 2004	13	3	4
Geomatics/Surveying Technologist	2254.1	OIM	JUN 2004	13	3	4
Guest Services Attendant	6672.1	OSM	MAR 2003	1	3	4
Heavy Equipment Operator	7421	OMi	DEC 2003	1	2	3
Heavy Equipment Technician	7312	OMI	FEB 2006	9	3	4
Heavy Equipment Technician	7321.3	OIM	FEB 2006	9	3	4
Helicopter Pilot	2271.1	OID	SEP 2003	1	3	4
Hydrometric Technician/Technologist	2212.1	Old	SEP 2005	13	3	3
Instrument Technician	2243	OIM	FEB 2006	9	2	4
Instrumental Musician	5133.1	OMI	MAY 2003	1	3	3
Instrumentation Engineering Technologist	2232.1	OIM	NOV 2003	13	2	2
Instrumentation Engineering Technologist	2241.1	OIM	NOV 2003	13	2	2
Ironworker	7264	OMI	FEB 2006	6	2	4
Jeweller	7344.1	OIM	APR 2003	1	4	2
Kitchen Helper and Food Assembler	6641.2	OMs	MAR 2003	1	3	4
Landscape Architectural Technologist	2225.4	OMD	MAR 2005	13	3	2
Landscape Gardener	2225.5	OMD	FEB 2006	5	3	5
Lighting Technician	5226.3	OMi	JUL 2005	1	3	4
Locksmith	7383.2	OMi	FEB 2006	6	4	3
Logging/Forestry Equipment Operators	8241.1	Omi	JAN 2006	1	4	3
Machinist	7231.1	OIM	FEB 2006	7	2	4
Magnetic Resonance Technologist	3215	OMI	JUL 2005	13	2	4
Make-Up Artist	5226.5	OMI	MAY 2003	1	3	3
Mechanical Engineering Technologist	2232.1	OIM	JUL 2004	13	2	3
Millwright	7311	OIM	FEB 2006	7	3	4
Motorcycle Mechanic	7334	OMi	FEB 2006	5	3	4
Museum Technician	5212.6	OMi	OCT 2003	13	4	4
Musical Instrument Repair Technician	7445	OMi	MAY 2003	4	3	3
Nuclear Medicine Technologist	3215.2	OMi	NOV 2004	13	2	4
Office Equipment Technician	2242	OIM	APR 2005	1	3	3
Oil and Gas Well Loggers and Testers	8232.2	OMi	AUG 2005	1	2	4
Oil Pipeline Operators and Maintenance Workers	9232	Old	AUG 2005	4	2	4
Optical Technician	3414.3	OMi	FEB 2005	1	3	2
Optician	3231	OMS	FEB 2005	4	3	2
Optometrist	3121	OSD	JAN 2005	17	2	2
Outdoor Power Equipment Technician	7335	OMi	FEB 2006	9	3	5
Pest Control Operator	7444	OMi	MAR 2005	1	4	4
Petroleum Engineering Technologist	2212.1	Old	OCT 2004	13	3	3
Photographic Processing Technician	9474	OMI	MAY 2005	1	4	2
Plastics Processing Technician	2233.2	OMi	FEB 2004	1	3	4
Plumber	7251	Oim	FEB 2006	8	2	5
Pollution Control Technologist	2211.1	OIM	SEP 2005	13	3	4
Power Engineer	7351	Oim	JUL 2005	1	3	4
Power Lineman	7244	Oim	FEB 2006	9	3	4
Power System Electrician	7243	Oim	FEB 2006	9	2	3
Pre-Press Technician	9472.5	OMI	DEC 2005	4	3	2
Prosthetic/Orthotic Technician	3219.4	OIM	MAR 2005	13	2	4
Prosthetist and Orthotist	3219.3	OID	MAR 2005	13	2	4

Occupational Profile Title	NOC Number	Interest Code	Production Date	Education Level	Outlook Level	Lifting Level
Pulpmill Operator	9432	OMi	OCT 2005	4	4	3
Radiation Therapist	3215.3	OMi	DEC 2004	13	2	3
Radiological Technologist	3215.1	OMi	JAN 2005	13	2	3
Railway Car Mechanic	7314	OMI	JUN 2003	1	4	4
Recording/Sound Engineer	5225	OMI	MAY 2003	1	3	2
Recreation Vehicle Service Technician	7383.3	OIM	FEB 2006	6	4	5
Refinery/Upgrader Process Operator	9232	Old	AUG 2005	12	2	4
Refrigeration and Air Conditioning Mechanic	7313	OMI	FEB 2006	8	3	4
Refuse Truck Driver	7422	OMi	JUN 2003	1	4	4
Respiratory Therapist	3214.1	OMi	JAN 2005	14	2	3
Rig Technician	8232.1	ODm	JUL 2005	9	2	4
Rig Technician	8412.1	OMd	JUL 2005	9	2	4
Sawfiler	7383.5	OMi	FEB 2006	6	4	5
Sawmill Machine Operator	9431	OMi	DEC 2005	1	4	4
Security Alarm Installer	2242	OIM	DEC 2003	4	3	3
Seed Cleaning/Conditioning Plant Manager	8252	OMi	MAR 2005	1	4	2
Seismic Observer	2212.2	OMi	SEP 2005	1	3	4
Service Rig Personnel	8412.1	OMd	JUL 2005	3	2	5
Sheet Metal Worker	7261	OMI	FEB 2006	9	3	4
Sprinkler Systems Installer	7252.2	Oim	FEB 2006	6	2	4
Steamfitter-Pipefitter	7252.1	Oim	FEB 2006	6	2	5
Sterile Processing Technician	3414.5	OMi	AUG 2003	4	3	3
Structural Steel and Plate Fitter	7263	OMI	FEB 2006	5	2	4
Surface Mining Equipment Operator	7421	OMi	AUG 2005	1	2	4
Taxi Driver	7413.1	OMS	JUL 2003	1	3	4
Technical Sales Representative	6221	OSi	OCT 2003	1	2	2
Telecommunications Engineering Technologist	2241.1	OIM	FEB 2004	13	2	4
Television Audio/Video Operator	5225	OMI	APR 2003	13	3	2
Television Camera Operator	5222	OMI	APR 2003	13	3	4
Tilesetter	7283	OMI	FEB 2006	5	3	5
Tool and Die Maker	7232.1	OIM	FEB 2006	7	3	4
Transport Refrigeration Technician	7313	OMI	FEB 2006	9	3	4
Turfgrass Management Specialist	2225.2	OMD	MAR 2005	1	3	4
Underground Miner	8231	OIM	AUG 2005	1	4	4
Upholsterer	7341	OMI	DEC 2003	3	4	4
Vending Machine Repairer	7445	OMi	JAN 2004	4	3	4
Warehousing Professionals	7452.2	OMi	FEB 2006	10	3	4
Watch Repairer	7344.2	OIM	APR 2003	1	4	2
Water and Wastewater Treatment Plant Operator	9424.1	OIM	FEB 2003	4	4	4
Water and Wastewater Treatment Plant Operator	9424.2	OIM	FEB 2003	4	4	4
Water Well Driller	7373	OMi	FEB 2006	5	2	5
Web Technician	2281.2	Omi	JUL 2004	13	2	3
Welder	7265.1	OMI	FEB 2006	5	2	1
Well Service Equipment Operator	8412.2	OMi	JUL 2005	4	2	4
Wildland Firefighter	8422	OMi	FEB 2004	1	4	5
Word Processing Operator	1411	OMi	OCT 2005	4	4	2
S : Social						
Acupuncturist	3232.2	SIM	MAR 2005	14	3	3
Addictions Counsellor	4153	SId	DEC 2005	13	3	2
Athletic Therapist	3144	SIM	MAR 2005	15	2	4
Auctioneer	6411	SMd	OCT 2003	1	3	3
Career and Technology Studies Teacher	4141	SID	JAN 2006	15	3	2
Career Development Professional	4213	SMI	NOV 2005	1	3	2
Casino Dealer	6443.2	SMD	SEP 2004	3	3	2
Child and Youth Care Worker	4212	SMi	NOV 2005	12	3	4
Community Health Representative	4212	SMi	APR 2005	12	3	2

Occupational Profile Title	NOC Number	Interest Code	Production Date	Education Level	Outlook Level	Lifting Level
Correctional Services Worker	4155.2	SMI	APR 2003	13	3	3
Driving Instructor	4216.1	SDM	OCT 2003	1	4	2
Early Childhood Educator	4214.1	SMd	NOV 2005	12	3	4
Educational Assistant	6472	SMi	JAN 2006	12	3	3
Educational Counsellor	4143	SId	JAN 2006	17	3	2
Elementary School Teacher	4142	SID	JAN 2006	15	3	2
Expressive Arts Therapists	3144	SIM	JAN 2005	17	2	1
Family/Marriage Counsellor	4153	SId	DEC 2005	17	3	2
Herbalist	3232.4	SID	JAN 2005	1	3	3
Heritage Interpreter	5212.3	SMd	NOV 2003	13	4	2
Homeopath	3232.5	SID	OCT 2004	16	3	2
Hotel and Motel Desk Clerk	6435	SMo	MAY 2003	4	3	2
Human Resources Professional	1223	SMd	OCT 2005	13	3	2
Kinesiologist	4167.1	SDI	MAR 2005	15	3	4
Library Technician	5211.1	SMi	DEC 2005	13	4	3
Life Skills Coach	4212	SMi	SEP 2003	1	3	2
Medical Secretary	1243	SOd	OCT 2005	12	2	3
Mental Health Worker	4212	SMi	JUN 2005	13	3	2
Midwife	3232.1	SID	JAN 2005	15	3	4
Model	5232.4	SMi	APR 2005	1	3	2
Nanny	6474.2	SMd	JUN 2003	1	3	4
Nurse Practitioner	3152	SMD	OCT 2004	17	2	3
Occupational Health Nurse	3152.2	SMD	SEP 2004	14	2	3
Occupational Therapist	3143	SIM	FEB 2005	15	2	4
Outdoor Sport/Recreation Guide	6442	SMO	MAY 2005	1	3	4
Parole/Probation Officer	4155.1	SMD	APR 2003	13	3	2
Personal Care Attendant	3413	SMo	JAN 2005	2	3	4
Personal Care Attendant	6471.1	SMo	JAN 2005	2	3	4
Psychiatric Aide	3413	SMo	FEB 2005	1	2	4
Psychiatric Nurse	3152.4	SMD	SEP 2004	13	2	4
Psychologist	4151	SIM	JUL 2005	17	3	2
Real Estate Agent	6232	SMd	DEC 2005	4	3	2
Receptionist	1414.1	SMd	OCT 2005	1	4	2
Recreation Co-ordinator/Supervisor	4167.5	SDI	MAR 2005	13	3	4
Recreation Therapist	3144	SIM	FEB 2005	13	2	3
Reflexologist	3232.6	SIM	NOV 2004	1	3	2
Registered Nurse	3152.1	SMD	SEP 2004	14	2	4
Rehabilitation Practitioner	4212	SMi	FEB 2005	13	3	2
Religious Leader	4154	SMI	NOV 2002	1	4	2
Sales Representative (Wholesale, Nontechnical)	6411	SMd	OCT 2003	4	3	3
Secondary School Teacher	4141	SID	JAN 2006	15	3	2
Social Worker	4152	SID	DEC 2005	13	3	2
Special Needs Teacher	4142	SID	JAN 2006	15	3	2
Tour Guide	6441.1	SMd	JUN 2003	1	3	2
Travel Consultant	6431	SMI	FEB 2005	1	4	2
Travel Guide	6441.2	SMd	MAY 2003	1	3	4
Unit Clerk	1243	SOd	OCT 2005	4	2	3
Volunteer Manager	4212	SMi	FEB 2005	1	3	2

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Occupational Profiles by Industry Cluster

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Accommodation and Food Services Industry

Occupational Profile Title	NOC Number	Interest Code	Production Date	Education Level	Outlook Level	Lifting Level
Providing Lodging and/or Food						
Accommodation Manager	0632	DMS	MAR 2003	13	3	2
Baker	6252	MOd	FEB 2006	5	4	4
Banquet Manager	0631	DMS	FEB 2004	1	3	2
Bartender	6452	MSd	MAR 2003	4	3	3
Cashier	6611	MOs	OCT 2003	1	4	3
Caterer	0631	DMS	FEB 2004	1	3	4
Chef	6241.1	DMI	MAR 2003	1	3	3
Cook	6242	MOd	FEB 2006	5	3	4
Executive Housekeeper	6213	MDs	MAY 2003	1	3	2
Food and Beverage Server	6453	MSo	MAR 2003	1	3	3
Food and Beverage Service Supervisor In Formal Dining Rooms	6212	MDs	MAR 2003	1	3	2
Food Service Helper	6641.3	OMs	MAR 2003	1	3	4
Food Service Supervisor	6212	MDs	MAR 2003	4	3	3
Guest Services Attendant	6672.1	OSM	MAR 2003	1	3	4
Hotel and Motel Desk Clerk	6435	SMo	MAY 2003	4	3	2
Kitchen Helper and Food Assembler	6641.2	OMs	MAR 2003	1	3	4
Restaurant Manager	0631	DMS	MAR 2003	1	3	2
Room/Housekeeping Attendant	6661	MOi	MAR 2003	1	4	4
Other Profiles Related to Accommodation and Food Services						
Building Superintendent	6663	MOI	DEC 2005	1	4	4
Carpet and Upholstery Cleaner	6662.1	OMd	JUN 2003	1	4	4
College, Technical or Vocational Instructor	4131	IDS	NOV 2005	13	3	2
Custodian	6663	MOI	JUN 2003	1	4	4
Dietitian	3132	DIS	MAR 2003	16	2	2
Dry Cleaning and Laundry Workers	6681.1	OMd	SEP 2003	1	3	3
Flight Attendant	6432.1	MSo	OCT 2003	4	3	4
Food and Nutrition Manager	6212	MDs	MAR 2003	13	3	3
Outdoor Sport/Recreation Guide	6442	SMO	MAY 2005	1	3	4
Special Event Co-ordinator	1226	DSI	APR 2003	13	3	2
Tour Guide	6441.1	SMd	JUN 2003	1	3	2
Travel Guide	6441.2	SMd	MAY 2003	1	3	4
University Professor	4121	IDS	NOV 2005	19	3	2
Vending Machine Route Worker	7414	MOs	MAR 2005	4	3	4
Indirectly Related Profiles						
Accountant	1111.2	MID	NOV 2005	15	3	2
Accounting Technician	1231	MDi	OCT 2005	4	3	2
Administrative Assistant	1411	OMi	OCT 2005	12	4	2
Arborist	2225.1	OMd	MAR 2005	1	3	4
Building Operator	6663	MOI	FEB 2005	3	4	5
Building Operator	7351	Oim	FEB 2005	3	4	5
Bus Driver	7412.1	OMS	SEP 2003	1	3	4
Call Centre Agent	1453.2	MSi	NOV 2005	1	3	2
Collection Agent	1435	MIs	NOV 2005	4	3	2
Computer Service Technician	2242	OIM	SEP 2004	1	3	4
Customer Support Analyst	2282	MSo	JUL 2004	1	2	2
Elevator Constructor	7318	OMI	FEB 2006	8	3	4
Human Resources Professional	1223	SMd	OCT 2005	13	3	2
Information Systems Consultant	2171.1	IMD	JUL 2004	15	2	2
Internal Auditor	1111.1	Mid	NOV 2005	15	3	2

Occupational Profile Title	NOC Number	Interest Code	Production Date	Education Level	Outlook Level	Lifting Level
Interpreter	5125.3	MIs	MAR 2005	15	2	2
Landscape Architectural Technologist	2225.4	OMD	MAR 2005	13	3	2
Landscape Gardener	2225.5	OMD	FEB 2006	5	3	5
Lawyer	4112	MID	NOV 2005	17	3	2
Management Consultant	1122.1	IDS	NOV 2005	17	2	2
Marketing Manager	0611.2	DSI	OCT 2005	13	3	2
Power Engineer	7351	Oim	JUL 2005	1	3	4
Private Investigator	6465.2	MIS	APR 2003	1	3	3
Private Trainer/Facilitator	1121	IMS	NOV 2005	1	3	2
Public Relations Representative	5124	IMS	DEC 2005	13	3	2
Purchasing Agent	1225	MDs	MAY 2003	1	3	2
Receptionist	1414.1	SMd	OCT 2005	1	4	2
Safety Officer	2263	MID	MAR 2005	1	3	3
Sales Representative (Wholesale, Nontechnical)	6411	SMd	OCT 2003	4	3	3
Security Guard	6651	Msd	APR 2003	1	3	3
Turfgrass Management Specialist	2225.2	OMD	MAR 2005	1	3	4
Webmaster	2175	IMD	JUL 2004	13	2	2

Occupational Profile Title	NOC Number	Interest Code	Production Date	Education Level	Outlook Level	Lifting Level
Agriculture Industry						
Growing Crops and Raising Animals						
Animal Care Attendant	6483	MOD	FEB 2005	1	3	4
Beekeeper	8251	DMO	MAR 2005	1	4	4
Dairy Producer	8251	DMO	FEB 2005	1	4	4
Farm Worker/Technician	8431	MOi	FEB 2005	1	4	4
Grain and Forage Crop Producer	8251	DMO	FEB 2005	1	4	4
Greenhouse Operator	8254	DMS	DEC 2003	13	4	2
Livestock/Poultry Producer	8251	DMO	MAR 2005	1	4	4
Market Gardener	8251	DMO	MAR 2005	1	4	4
Nursery Operator	8254	DMS	DEC 2003	13	4	3
Swine Technician	8253.2	MId	FEB 2005	3	4	4
Profiles Related to Agriculture						
Agricultural Commodity Inspector	2222.2	Mid	FEB 2005	1	3	3
Agricultural Engineer	2148.1	IOD	JUN 2004	15	3	4
Agricultural Equipment Technician	7312	OMI	FEB 2006	9	3	4
Agricultural Products Processing Machine Operator	9461.2	OMi	FEB 2005	1	3	4
Agrologist	2123	ISD	AUG 2005	15	3	2
Animal Health Technologist	3213	MOI	FEB 2005	13	3	4
Arborist	2225.1	OMd	MAR 2005	1	3	4
Biological Technician	2221.2	Moi	SEP 2005	13	3	3
Farrier	7266.1	OMI	MAY 2005	1	4	4
Feed Mill Production Worker	9461.2	OMi	MAR 2005	1	3	4
Food Science Technologist	2211.1	OIM	MAR 2005	13	3	2
Food Scientist	2121.1	IOD	MAR 2005	15	3	2
Pet Groomer	6483	MOD	JUL 2003	1	3	4
Seed Cleaning/Conditioning Plant Manager	8252	OMi	MAR 2005	1	4	2
Soil Scientist	2115.2	IOD	SEP 2005	15	3	2
Turfgrass Management Specialist	2225.2	OMD	MAR 2005	1	3	4
Veterinarian	3114	IOs	MAR 2005	17	3	4
Indirectly Related Profiles						
Accountant	1111.2	MID	NOV 2005	15	3	2
Accounting Technician	1231	MDi	OCT 2005	4	3	2
Administrative Assistant	1411	OMi	OCT 2005	12	4	2
Arbitrator	1121	IMS	OCT 2005	1	3	2
Assessor	1235.1	Mds	DEC 2005	13	4	2
Biochemist	2112	IOD	SEP 2005	15	3	2
Biotechnologist	2121.2	IOD	SEP 2005	15	3	2
Chemical Technologist	2211.1	OIM	JUN 2004	13	3	2
Chemist	2112	IOD	JUL 2004	15	3	2
College, Technical or Vocational Instructor	4131	IDS	NOV 2005	13	3	2
Computer Service Technician	2242	OIM	SEP 2004	1	3	4
Cook	6242	MOd	FEB 2006	5	3	4
Ecologist	2121.1	IOD	SEP 2005	17	3	2
Economist	4162	IMD	NOV 2005	17	3	2
Engineering Design and Drafting Technologist	2253.1	MIO	AUG 2005	13	3	2
Entomologist	2121.1	IOD	SEP 2005	15	3	2
Environmental Engineer	2131	IOD	JUN 2004	15	2	2
Industrial Designer	2252	IMO	JUL 2005	1	4	2
Landscape Gardener	2225.5	OMD	FEB 2006	5	3	5
Lawyer	4112	MID	NOV 2005	17	3	2
Librarian	5111	MSd	DEC 2005	17	4	2
Library Technician	5211.1	SMi	DEC 2005	13	4	3

Occupational Profile Title	NOC Number	Interest Code	Production Date	Education Level	Outlook Level	Lifting Level
Management Consultant	1122.1	IDS	NOV 2005	17	2	2
Marketing Manager	0611.2	DSI	OCT 2005	13	3	2
Mechanical Engineer	2132	IOD	SEP 2004	15	2	2
Microbiologist	2121.2	IOD	SEP 2005	15	3	2
Parts Technician	1472	MOS	FEB 2006	6	3	3
Pest Control Operator	7444	OMi	MAR 2005	1	4	4
Purchasing Agent	1225	MDs	MAY 2003	1	3	2
Sales Representative (Wholesale, Nontechnical)	6411	SMd	OCT 2003	4	3	3
Shipper and Receiver	1471	MOd	OCT 2005	1	3	4
Software Engineer	2173	IMD	JUL 2004	15	2	2
Technical Sales Representative	6221	OSi	OCT 2003	1	2	2
Technical Writer	5121.2	IMo	JUN 2005	1	3	2
Truck Driver	7411.1	MOd	OCT 2003	1	3	3
University Professor	4121	IDS	NOV 2005	19	3	2
Warehousing Professionals	7452.2	OMi	FEB 2006	10	3	4

Occupational Profile Title	NOC Number	Interest Code	Production Date	Education Level	Outlook Level	Lifting Level
Computer-Related Occupational Profiles						
Designing, Installing and Maintaining Computer Systems						
Automated Systems Technologist	2232.1	OIM	JUL 2004	13	2	4
Computer and Network Operator	2281.1	OMd	JUL 2004	1	2	3
Computer Engineer	2147.1	IOD	JUL 2004	15	3	3
Computer Programmer	2174.1	IMD	JUL 2004	1	2	2
Computer Service Technician	2242	OIM	SEP 2004	1	3	4
Customer Support Analyst	2282	MSo	JUL 2004	1	2	2
Data Administrator	2172.2	IMD	JUL 2004	13	2	2
Database Analyst	2172.1	IMD	JUL 2004	13	2	2
Electronics Engineering Technologist	2241.1	OIM	SEP 2004	13	2	4
Information Systems Consultant	2171.1	IMD	JUL 2004	15	2	2
Information Systems Quality Assurance Analyst	2171.3	IMD	JUL 2004	13	2	2
Interactive Media Developer	2174.2	IMD	JUL 2004	13	2	2
Software Engineer	2173	IMD	JUL 2004	15	2	2
Systems Auditor	2171.4	MDI	JUL 2004	15	2	2
Systems Security Analyst	2171.2	MID	JUL 2004	13	2	2
Systems Tester	2283	MOi	JUL 2004	1	2	2
Web Designer	2175	IMD	JUL 2004	13	2	2
Web Technician	2281.2	Omi	JUL 2004	13	2	3
Webmaster	2175	IMD	JUL 2004	13	2	2
Assembling, Installing and Servicing Digital Equipment						
Biomedical Engineering Technologist	2241.1	OIM	JUN 2004	13	2	4
Broadcast Maintenance Technologist	5224	OMi	JUL 2004	13	3	2
Communication Technician	7246	OIM	FEB 2006	8	4	4
Electrical Engineer	2133	IOD	AUG 2004	15	2	3
Electrical Engineering Technologist	2241.1	OIM	SEP 2004	13	2	4
Electronic Technician	2242	OIM	FEB 2006	8	3	4
Electronics Assemblers and Fabricators	9483.1	OMi	SEP 2003	1	2	2
Instrument Technician	2243	OIM	FEB 2006	9	2	4
Office Equipment Technician	2242	OIM	APR 2005	1	3	3
Security Alarm Installer	2242	OIM	DEC 2003	4	3	3
Vending Machine Repairer	7445	OMi	JAN 2004	4	3	4
Teaching						
Career and Technology Studies Teacher	4141	SID	JAN 2006	15	3	2
College, Technical or Vocational Instructor	4131	IDS	NOV 2005	13	3	2
Private Trainer/Facilitator	1121	IMS	NOV 2005	1	3	2
University Professor	4121	IDS	NOV 2005	19	3	2
Indirectly Related Profiles						
Accountant	1111.2	MID	NOV 2005	15	3	2
Accounting Technician	1231	MDi	OCT 2005	4	3	2
Administrative Assistant	1411	OMi	OCT 2005	12	4	2
Creative Writer	5121.1	IMd	MAY 2005	1	3	2
Electrician	7241	Oim	FEB 2006	8	2	4
Electrician	7242	Oim	FEB 2006	8	2	4
Graphic Designer	5241.1	IMS	MAY 2005	13	3	2
Lawyer	4112	MID	NOV 2005	17	3	2
Librarian	5111	MSd	DEC 2005	17	4	2
Library Technician	5211.1	SMi	DEC 2005	13	4	3
Linguist	4169.5	IDM	NOV 2005	15	3	2
Management Consultant	1122.1	IDS	NOV 2005	17	2	2
Market Research Analyst	4163	DIS	OCT 2005	1	2	2

Occupational Profile Title	NOC Number	Interest Code	Production Date	Education Level	Outlook Level	Lifting Level
Purchasing Agent	1225	MDs	MAY 2003	1	3	2
Receptionist	1414.1	SMd	OCT 2005	1	4	2
Shipper and Receiver	1471	MOd	OCT 2005	1	3	4
Technical Sales Representative	6221	OSi	OCT 2003	1	2	2
Technical Writer	5121.2	IMo	JUN 2005	1	3	2
Warehousing Professionals	7452.2	OMi	FEB 2006	10	3	4

Occupational Profile Title	NOC Number	Interest Code	Production Date	Education Level	Outlook Level	Lifting Level
Construction Industry						
Constructing, Repairing and Renovating						
Blaster	7372.2	OID	MAR 2005	1	2	4
Bricklayer	7281	OMI	FEB 2006	5	3	4
Carpenter	7271	OMI	FEB 2006	5	2	4
Civil Engineer	2131	IOD	JUN 2004	15	2	1
Civil Engineering Technologist	2231.1	IMd	JUN 2004	13	2	3
Communication Technician	7246	OIM	FEB 2006	8	4	4
Concrete Finisher	7282	OMi	FEB 2006	5	3	4
Construction Craft Labourer	7611	MOi	FEB 2006	11	3	4
Crane and Hoisting Equipment Operator	7371	OMi	FEB 2006	6	2	5
Electrician	7241	Oim	FEB 2006	8	2	4
Electrician	7242	Oim	FEB 2006	8	2	4
Elevator Constructor	7318	OMI	FEB 2006	8	3	4
Floorcovering Installer	7295	MOi	FEB 2006	5	3	4
Gasfitter	7253	OMi	FEB 2006	5	3	5
Glazier	7292	MOI	FEB 2006	5	3	5
Heavy Equipment Operator	7421	OMi	DEC 2003	1	2	3
Insulator	7293	MOi	FEB 2006	5	2	4
Ironworker	7264	OMI	FEB 2006	6	2	4
Lather-Interior Systems Mechanic	7284.3	MOi	FEB 2006	5	3	4
Painter and Decorator	7294	MOi	FEB 2006	5	3	4
Plasterer	7284.1	MOi	DEC 2003	1	3	4
Plumber	7251	Oim	FEB 2006	8	2	5
Power Lineman	7244	Oim	FEB 2006	9	3	4
Refrigeration and Air Conditioning Mechanic	7313	OMI	FEB 2006	8	3	4
Roofer	7291.1	MOi	FEB 2006	5	3	4
Safety Officer	2263	MID	MAR 2005	1	3	3
Sheet Metal Worker	7261	OMI	FEB 2006	9	3	4
Sprinkler Systems Installer	7252.2	Oim	FEB 2006	6	2	4
Steamfitter-Pipefitter	7252.1	Oim	FEB 2006	6	2	5
Structural Steel and Plate Fitter	7263	OMI	FEB 2006	5	2	4
Tilesetter	7283	OMI	FEB 2006	5	3	5
Welder	7265.1	OMI	FEB 2006	5	2	1
Other Profiles Related to Construction						
Architect	2151	ISD	MAR 2005	17	3	2
Architectural Technologist	2251	IMO	MAR 2005	13	3	2
Boilermaker	7262	OMI	FEB 2006	7	2	4
Cabinetmaker	7272	OMI	FEB 2006	7	3	4
Commercial Diver	7382	OIM	AUG 2005	12	3	4
Drafting Technician	2253.2	MIO	AUG 2005	12	3	2
Electrical Contractor	7212	Dio	FEB 2004	1	3	2
Engineering Design and Drafting Technologist	2253.1	MIO	AUG 2005	13	3	2
Gas Utility Operator	7442.2	MOi	FEB 2006	10	4	4
Heavy Equipment Technician	7312	OMI	FEB 2006	9	3	4
Heavy Equipment Technician	7321.3	OIM	FEB 2006	9	3	4
Home Inspector	2264	MId	SEP 2003	1	3	3
Interior Designer	5242	IMS	MAR 2005	15	3	2
Land Surveyor	2154	IOD	JUL 2004	15	3	3
Landscape Architect	2152	ISD	MAR 2005	15	3	2
Landscape Architectural Technologist	2225.4	OMD	MAR 2005	13	3	2
Landscape Gardener	2225.5	OMD	FEB 2006	5	3	5

Occupational Profile Title	NOC Number	Interest Code	Production Date	Education Level	Outlook Level	Lifting Level
Locksmith	7383.2	OMi	FEB 2006	6	4	3
Mechanical Engineering Technologist	2232.1	OIM	JUL 2004	13	2	3
Power System Electrician	7243	Oim	FEB 2006	9	2	3
Safety Codes Officer	2264	MId	MAY 2003	1	3	2
Security Alarm Installer	2242	OIM	DEC 2003	4	3	3
Water Well Driller	7373	OMi	FEB 2006	5	2	5
Indirectly Related Profiles						
Accountant	1111.2	MID	NOV 2005	15	3	2
Accounting Technician	1231	MDi	OCT 2005	4	3	2
Administrative Assistant	1411	OMi	OCT 2005	12	4	2
Arbitrator	1121	IMS	OCT 2005	1	3	2
Arborist	2225.1	OMd	MAR 2005	1	3	4
Archaeologist	4169.2	IDM	NOV 2005	15	3	3
Assessor	1235.1	Mds	DEC 2005	13	4	2
Auto Body Technician	7322	OMi	FEB 2006	6	4	4
Carpet and Upholstery Cleaner	6662.1	OMd	JUN 2003	1	4	4
Chef	6241.1	DMI	MAR 2003	1	3	3
College, Technical or Vocational Instructor	4131	IDS	NOV 2005	13	3	2
Computer and Network Operator	2281.1	OMd	JUL 2004	1	2	3
Computer Engineer	2147.1	IOD	JUL 2004	15	3	3
Computer Programmer	2174.1	IMD	JUL 2004	1	2	2
Computer Service Technician	2242	OIM	SEP 2004	1	3	4
Cook	6242	MOd	FEB 2006	5	3	4
Custodian	6663	MOI	JUN 2003	1	4	4
Customer Support Analyst	2282	MSo	JUL 2004	1	2	2
Dispatcher	1475.1	MDS	JUN 2003	1	3	2
Economist	4162	IMD	NOV 2005	17	3	2
Electrical Engineer	2133	IOD	AUG 2004	15	2	3
Electrical Engineering Technologist	2241.1	OIM	SEP 2004	13	2	4
Electrical Motor Systems Technician	7333	OMI	FEB 2006	9	3	4
Electronics Engineering Technologist	2241.1	OIM	SEP 2004	13	2	4
Environmental Engineer	2131	IOD	JUN 2004	15	2	2
Ergonomist	4161.1	IDM	JAN 2006	15	3	2
Food Service Supervisor	6212	MDs	MAR 2003	4	3	3
Geomatics/Surveying Engineer	2131	IOD	JUL 2004	15	2	4
Geomatics/Surveying Technologist	2254.1	OIM	JUN 2004	13	3	4
Helicopter Pilot	2271.1	OID	SEP 2003	1	3	4
Human Resources Professional	1223	SMd	OCT 2005	13	3	2
Industrial Designer	2252	IMO	JUL 2005	1	4	2
Industrial Engineer	2141	IOD	JUN 2004	15	3	2
Industrial Engineering Technologist	2233.1	IMd	OCT 2004	13	3	2
Information Systems Consultant	2171.1	IMD	JUL 2004	15	2	2
Instrument Technician	2243	OIM	FEB 2006	9	2	4
Interior Decorator	6421	MSd	MAR 2005	1	3	3
Internal Auditor	1111.1	Mid	NOV 2005	15	3	2
Kitchen Helper and Food Assembler	6641.2	OMs	MAR 2003	1	3	4
Lawyer	4112	MID	NOV 2005	17	3	2
Librarian	5111	MSd	DEC 2005	17	4	2
Library Technician	5211.1	SMi	DEC 2005	13	4	3
Machinist	7231.1	OIM	FEB 2006	7	2	4
Management Consultant	1122.1	IDS	NOV 2005	17	2	2
Manufacturing Engineer	2141	IOD	JUN 2004	15	3	2
Materials Engineering Technologist	2233.1	IMd	JUL 2004	13	3	4
Materials/Metallurgical Engineer	2142	IOD	JUL 2004	15	3	3
Mechanical Engineer	2132	IOD	SEP 2004	15	2	2
Mechanical Engineering Technologist	2232.1	OIM	JUL 2004	13	2	3
Millwright	7311	OIM	FEB 2006	7	3	4
Occupational Health Nurse	3152.2	SMD	SEP 2004	14	2	3

Occupational Profile Title	NOC Number	Interest Code	Production Date	Education Level	Outlook Level	Lifting Level
Occupational Hygienist	4161.2	IDM	MAR 2005	15	3	2
Operations Manager	0911	DIM	JAN 2006	1	3	2
Paralegal	4211.1	MSI	OCT 2005	13	3	2
Parts Technician	1472	MOS	FEB 2006	6	3	3
Pollution Control Technologist	2211.1	OIM	SEP 2005	13	3	4
Property Manager	1224	MDs	JAN 2006	4	3	2
Public Relations Representative	5124	IMS	DEC 2005	13	3	2
Purchasing Agent	1225	MDs	MAY 2003	1	3	2
Real Estate Agent	6232	SMd	DEC 2005	4	3	2
Real Estate Appraiser	1235.3	Mds	JAN 2006	1	4	2
Receptionist	1414.1	SMd	OCT 2005	1	4	2
Sales Representative (Wholesale, Nontechnical)	6411	SMd	OCT 2003	4	3	3
Security Guard	6651	Msd	APR 2003	1	3	3
Seismic Worker	8615	MOi	SEP 2005	1	2	4
Shipper and Receiver	1471	MOd	OCT 2005	1	3	4
Software Engineer	2173	IMD	JUL 2004	15	2	2
Technical Sales Representative	6221	OSi	OCT 2003	1	2	2
Technical Writer	5121.2	IMo	JUN 2005	1	3	2
Truck Driver	7411.1	MOd	OCT 2003	1	3	3
Turfgrass Management Specialist	2225.2	OMD	MAR 2005	1	3	4
Urban, Regional and Park Planners	2153	ISD	JUN 2003	15	2	2
Warehousing Professionals	7452.2	OMi	FEB 2006	10	3	4

Occupational Profile Title	NOC Number	Interest Code	Production Date	Education Level	Outlook Level	Lifting Level
Educational Services Industry						
Teaching						
Career and Technology Studies Teacher	4141	SID	JAN 2006	15	3	2
College, Technical or Vocational Instructor	4131	IDS	NOV 2005	13	3	2
Driving Instructor	4216.1	SDM	OCT 2003	1	4	2
Educational Assistant	6472	SMi	JAN 2006	12	3	3
Educational Counsellor	4143	SId	JAN 2006	17	3	2
Elementary School Teacher	4142	SID	JAN 2006	15	3	2
English as a Second Language Teacher - Adults	4131	IDS	NOV 2005	1	3	2
Environmental Education Specialist	4131	IDS	OCT 2005	15	3	2
Private Trainer/Facilitator	1121	IMS	NOV 2005	1	3	2
Secondary School Teacher	4141	SID	JAN 2006	15	3	2
Special Needs Teacher	4142	SID	JAN 2006	15	3	2
Sports Instructor	5254	MSi	MAR 2005	1	2	4
University Professor	4121	IDS	NOV 2005	19	3	2
Other Profiles Related to Instruction and Training						
Addictions Counsellor	4153	SId	DEC 2005	13	3	2
Audiologist	3141.1	OIS	DEC 2004	17	2	2
Career Development Professional	4213	SMI	NOV 2005	1	3	2
Child and Youth Care Worker	4212	SMi	NOV 2005	12	3	4
Coach	5252.1	DSM	MAR 2005	1	3	2
Correctional Services Worker	4155.2	SMI	APR 2003	13	3	3
Dental Hygienist	3222.1	MOS	NOV 2004	14	3	3
Early Childhood Educator	4214.1	SMd	NOV 2005	12	3	4
Expressive Arts Therapists	3144	SIM	JAN 2005	17	2	1
Fitness Instructor	5254	MSi	MAR 2005	4	2	4
Interpretive Naturalist	2121.1	IOD	NOV 2003	13	3	2
Librarian	5111	MSd	DEC 2005	17	4	2
Library Technician	5211.1	SMi	DEC 2005	13	4	3
Mental Health Worker	4212	SMi	JUN 2005	13	3	2
Occupational Therapist	3143	SIM	FEB 2005	15	2	4
Recreation Co-ordinator/Supervisor	4167.5	SDI	MAR 2005	13	3	4
Safety Officer	2263	MID	MAR 2005	1	3	3
School Business Official	0313.2	DMs	DEC 2003	1	3	2
Social Worker	4152	SID	DEC 2005	13	3	2
Speech-Language Pathologist	3141.2	MIS	DEC 2004	17	2	2
Indirectly Related Profiles						
Accountant	1111.2	MID	NOV 2005	15	3	2
Accounting Technician	1231	MDi	OCT 2005	4	3	2
Administrative Assistant	1411	OMi	OCT 2005	12	4	2
Anthropologist	4169.1	IDM	NOV 2005	15	3	2
Archaeologist	4169.2	IDM	NOV 2005	15	3	3
Archivist	5113	MIS	DEC 2005	17	4	2
Astronomer	2111.2	IOD	JAN 2006	17	3	2
Athletic Therapist	3144	SIM	MAR 2005	15	2	4
Biochemist	2112	IOD	SEP 2005	15	3	2
Biological Technician	2221.2	Moi	SEP 2005	13	3	3
Biologist	2121.1	IOD	JAN 2005	15	3	2
Biotechnologist	2121.2	IOD	SEP 2005	15	3	2
Building Operator	6663	MOI	FEB 2005	3	4	5
Building Operator	7351	Oim	FEB 2005	3	4	5
Bus Driver	7412.1	OMS	SEP 2003	1	3	4
Carpenter	7271	OMI	FEB 2006	5	2	4

Occupational Profile Title	NOC Number	Interest Code	Production Date	Education Level	Outlook Level	Lifting Level
Cashier	6611	MOs	OCT 2003	1	4	3
Chef	6241.1	DMI	MAR 2003	1	3	3
Chemical Technologist	2211.1	OIM	JUN 2004	13	3	2
Chemist	2112	IOD	JUL 2004	15	3	2
Choral Conductor	5132.1	DIM	MAY 2003	1	3	2
Computer and Network Operator	2281.1	OMd	JUL 2004	1	2	3
Computer Engineer	2147.1	IOD	JUL 2004	15	3	3
Computer Programmer	2174.1	IMD	JUL 2004	1	2	2
Computer Service Technician	2242	OIM	SEP 2004	1	3	4
Conservator	5112.1	Dim	MAY 2003	15	4	4
Custodian	6663	MOI	JUN 2003	1	4	4
Customer Support Analyst	2282	MSo	JUL 2004	1	2	2
Dancer	5134.1	Mid	JUL 2003	1	3	4
Ecologist	2121.1	IOD	SEP 2005	17	3	2
Electrician	7241	Oim	FEB 2006	8	2	4
Electrician	7242	Oim	FEB 2006	8	2	4
Entomologist	2121.1	IOD	SEP 2005	15	3	2
Food Scientist	2121.1	IOD	MAR 2005	15	3	2
Food Service Supervisor	6212	MDs	MAR 2003	4	3	3
Fundraiser	5124	IMS	FEB 2005	1	3	2
Geneticist	2121.2	IOD	NOV 2005	17	3	2
Geographer	4169.3	IDM	AUG 2005	15	3	2
Gerontological Specialist	4169.9	IDM	NOV 2004	1	3	2
Historian	4169.4	IDM	NOV 2005	17	3	2
Human Resources Professional	1223	SMd	OCT 2005	13	3	2
Illustrator	5241.2	IMS	JUN 2005	1	3	2
Instrumental Musician	5133.1	OMI	MAY 2003	1	3	3
Internal Auditor	1111.1	Mid	NOV 2005	15	3	2
Kitchen Helper and Food Assembler	6641.2	OMs	MAR 2003	1	3	4
Landscape Gardener	2225.5	OMD	FEB 2006	5	3	5
Lawyer	4112	MID	NOV 2005	17	3	2
Linguist	4169.5	IDM	NOV 2005	15	3	2
Microbiologist	2121.2	IOD	SEP 2005	15	3	2
Office Equipment Technician	2242	OIM	APR 2005	1	3	3
Orchestra/Band Conductor	5132.1	DIM	MAY 2003	15	3	2
Painter/Printmaker	5136.1	IOm	JUL 2005	1	3	2
Parole/Probation Officer	4155.1	SMD	APR 2003	13	3	2
Pharmacologist	2121.2	IOD	FEB 2005	15	3	2
Physicist	2111.1	IOD	DEC 2005	15	3	2
Physiologist	2121.1	IOD	APR 2005	19	3	2
Political Scientist	4169.6	IDM	JAN 2006	17	3	2
Power Engineer	7351	Oim	JUL 2005	1	3	4
Psychologist	4151	SIM	JUL 2005	17	3	2
Public Relations Representative	5124	IMS	DEC 2005	13	3	2
Purchasing Agent	1225	MDs	MAY 2003	1	3	2
Recreation and Sport Administrator	0513	DMI	MAR 2005	15	3	2
Recreation Facility Operator	6671.2	MOS	MAR 2005	1	3	4
Sales Representative (Wholesale, Nontechnical)	6411	SMd	OCT 2003	4	3	3
Sculptor	5136.2	IOm	JUN 2005	1	3	3
Security Guard	6651	Msd	APR 2003	1	3	3
Shipper and Receiver	1471	MOd	OCT 2005	1	3	4
Sign Language Interpreter	5125.3	MIs	MAR 2005	13	2	2
Singer	5133.2	Mid	MAY 2003	1	3	2
Sociologist	4169.8	IDM	NOV 2005	17	3	2
Software Engineer	2173	IMD	JUL 2004	15	2	2
Special Event Co-ordinator	1226	DSI	APR 2003	13	3	2
Statistician	2161.2	IMD	DEC 2005	15	3	2

Occupational Profile Title	NOC Number	Interest Code	Production Date	Education Level	Outlook Level	Lifting Level
Technical Sales Representative	6221	OSi	OCT 2003	1	2	2
Technical Writer	5121.2	IMo	JUN 2005	1	3	2
Toxicologist	2121.2	IOD	FEB 2005	15	3	2
Volunteer Manager	4212	SMi	FEB 2005	1	3	2
Warehousing Professionals	7452.2	OMi	FEB 2006	10	3	4
Web Designer	2175	IMD	JUL 2004	13	2	2
Webmaster	2175	IMD	JUL 2004	13	2	2
Word Processing Operator	1411	OMi	OCT 2005	4	4	2

Environment-Related Occupational Profiles

Occupational Profile Title	NOC Number	Interest Code	Production Date	Education Level	Outlook Level	Lifting Level
Monitoring, Assessing and Educating						
Ecologist	2121.1	IOD	SEP 2005	17	3	2
Environmental Auditor	2263	MID	SEP 2005	15	3	2
Environmental Education Specialist	4131	IDS	OCT 2005	15	3	2
Environmental Engineer	2131	IOD	JUN 2004	15	2	2
Hazardous Waste Management Technologist	2263	MID	SEP 2005	13	3	4
Pollution Control Technologist	2211.1	OIM	SEP 2005	13	3	4
Other Environment-Related Profiles						
Agricultural Engineer	2148.1	IOD	JUN 2004	15	3	4
Biochemist	2112	IOD	SEP 2005	15	3	2
Biological Technician	2221.2	Moi	SEP 2005	13	3	3
Biologist	2121.1	IOD	JAN 2005	15	3	2
Biotechnologist	2121.2	IOD	SEP 2005	15	3	2
Chemical Engineer	2134	IOD	JUN 2004	15	2	4
Chemical Engineering Technologist	2211.1	OIM	JUL 2004	13	3	2
Chemical Technologist	2211.1	OIM	JUN 2004	13	3	2
Chemist	2112	IOD	JUL 2004	15	3	2
Civil Engineer	2131	IOD	JUN 2004	15	2	1
Civil Engineering Technologist	2231.1	IMd	JUN 2004	13	2	3
Conservation Officer	2224	DMS	JAN 2006	15	4	3
Entomologist	2121.1	IOD	SEP 2005	15	3	2
Food Science Technologist	2211.1	OIM	MAR 2005	13	3	2
Food Scientist	2121.1	IOD	MAR 2005	15	3	2
Forest Technician	2223	DMI	JAN 2006	12	3	3
Forest Technologist	2223	DMI	JAN 2006	13	3	2
Forester	2122	ISD	JAN 2006	15	3	2
Geneticist	2121.2	IOD	NOV 2005	17	3	2
Geographer	4169.3	IDM	AUG 2005	15	3	2
Geological and Geophysical Technologist	2212.1	Oid	OCT 2004	13	3	4
Geologist	2113	IOD	JUN 2004	15	3	2
Geomatics/Surveying Engineer	2131	IOD	JUL 2004	15	2	4
Geomatics/Surveying Technologist	2254.1	OIM	JUN 2004	13	3	4
Hydrologist	2113	IOD	SEP 2005	15	3	4
Hydrometric Technician/Technologist	2212.1	Oid	SEP 2005	13	3	3
Interpretive Naturalist	2121.1	IOD	NOV 2003	13	3	2
Meteorologist	2114	IOD	OCT 2005	15	3	2
Microbiologist	2121.2	IOD	SEP 2005	15	3	2
Municipal Recycling Truck Driver	7411.2	MOd	JUN 2003	1	3	4
Municipal Recycling Waste Handler	9619	MOi	JUN 2003	1	4	4
Oceanographer	2113	IOD	OCT 2005	17	3	2
Park Warden	2224	DMS	JAN 2006	15	4	4
Pathologist	3111.2	IOD	DEC 2004	19	2	2
Pharmacologist	2121.2	IOD	FEB 2005	15	3	2
Physicist	2111.1	IOD	DEC 2005	15	3	2
Physiologist	2121.1	IOD	APR 2005	19	3	2
Public Health Inspector	2263	MID	DEC 2003	15	3	3
Soil Scientist	2115.2	IOD	SEP 2005	15	3	2
Toxicologist	2121.2	IOD	FEB 2005	15	3	2
Urban, Regional and Park Planners	2153	ISD	JUN 2003	15	2	2
Water and Wastewater Treatment Plant Operator	9424.1	OIM	FEB 2003	4	4	4

Occupational Profile Title	NOC Number	Interest Code	Production Date	Education Level	Outlook Level	Lifting Level
Water and Wastewater Treatment Plant Operator	9424.2	OIM	FEB 2003	4	4	4
Indirectly Related Profiles						
Accountant	1111.2	MID	NOV 2005	15	3	2
Accounting Technician	1231	MDi	OCT 2005	4	3	2
Administrative Assistant	1411	OMi	OCT 2005	12	4	2
Agricultural Commodity Inspector	2222.2	Mid	FEB 2005	1	3	3
Animal Health Technologist	3213	MOI	FEB 2005	13	3	4
Arbitrator	1121	IMS	OCT 2005	1	3	2
Arborist	2225.1	OMd	MAR 2005	1	3	4
Archaeologist	4169.2	IDM	NOV 2005	15	3	3
Architect	2151	ISD	MAR 2005	17	3	2
Architectural Technologist	2251	IMO	MAR 2005	13	3	2
Biotechnologist	2121.2	IOD	SEP 2005	15	3	2
Bylaw Enforcement Officer	6463.2	MDs	APR 2003	1	3	4
Call Centre Agent	1453.2	MSi	NOV 2005	1	3	2
Cashier	6611	MOs	OCT 2003	1	4	3
College, Technical or Vocational Instructor	4131	IDS	NOV 2005	13	3	2
Commercial Diver	7382	OIM	AUG 2005	12	3	4
Computer and Network Operator	2281.1	OMd	JUL 2004	1	2	3
Computer Engineer	2147.1	IOD	JUL 2004	15	3	3
Computer Programmer	2174.1	IMD	JUL 2004	1	2	2
Computer Service Technician	2242	OIM	SEP 2004	1	3	4
Custodian	6663	MOI	JUN 2003	1	4	4
Customer Support Analyst	2282	MSo	JUL 2004	1	2	2
Economist	4162	IMD	NOV 2005	17	3	2
Editor	5122	DIS	JUL 2005	15	3	2
Electronics Engineering Technologist	2241.1	OIM	SEP 2004	13	2	4
Ergonomist	4161.1	IDM	JAN 2006	15	3	2
Exhibit Designer	5243.3	IMD	OCT 2003	1	3	3
Exploration Geophysicist	2113	IOD	JUN 2004	15	3	4
Food Scientist	2121.1	IOD	MAR 2005	15	3	2
Fundraiser	5124	IMS	FEB 2005	1	3	2
Geneticist	2121.2	IOD	NOV 2005	17	3	2
Greenhouse Operator	8254	DMS	DEC 2003	13	4	2
Helicopter Pilot	2271.1	OID	SEP 2003	1	3	4
Historian	4169.4	IDM	NOV 2005	17	3	2
Human Resources Professional	1223	SMd	OCT 2005	13	3	2
Illustrator	5241.2	IMS	JUN 2005	1	3	2
Industrial Designer	2252	IMO	JUL 2005	1	4	2
Information Systems Consultant	2171.1	IMD	JUL 2004	15	2	2
Internal Auditor	1111.1	Mid	NOV 2005	15	3	2
Land Agent	1225	MDs	APR 2005	1	3	2
Land Surveyor	2154	IOD	JUL 2004	15	3	3
Landscape Architect	2152	ISD	MAR 2005	15	3	2
Landscape Architectural Technologist	2225.4	OMD	MAR 2005	13	3	2
Lawyer	4112	MID	NOV 2005	17	3	2
Librarian	5111	MSd	DEC 2005	17	4	2
Library Technician	5211.1	SMi	DEC 2005	13	4	3
Management Consultant	1122.1	IDS	NOV 2005	17	2	2
Marketing Manager	0611.2	DSI	OCT 2005	13	3	2
Mechanical Engineer	2132	IOD	SEP 2004	15	2	2
Mediator	1121	IMS	OCT 2005	1	3	2
Nursery Operator	8254	DMS	DEC 2003	13	4	3
Occupational Health and Safety Inspector	2263	MID	MAR 2005	1	3	2
Occupational Hygienist	4161.2	IDM	MAR 2005	15	3	2
Operations Manager	0911	DIM	JAN 2006	1	3	2
Outdoor Sport/Recreation Guide	6442	SMO	MAY 2005	1	3	4

Occupational Profile Title	NOC Number	Interest Code	Production Date	Education Level	Outlook Level	Lifting Level
Paralegal	4211.1	MSI	OCT 2005	13	3	2
Pharmacologist	2121.2	IOD	FEB 2005	15	3	2
Photographer	5221	IMO	JUN 2005	1	3	3
Physician	3112	ISD	NOV 2004	19	2	3
Physiologist	2121.1	IOD	APR 2005	19	3	2
Political Scientist	4169.6	IDM	JAN 2006	17	3	2
Private Trainer/Facilitator	1121	IMS	NOV 2005	1	3	2
Producer - Film, Radio, Television and Theatre	5131.1	IDS	MAY 2003	1	3	2
Public Relations Representative	5124	IMS	DEC 2005	13	3	2
Purchasing Agent	1225	MDs	MAY 2003	1	3	2
Receptionist	1414.1	SMd	OCT 2005	1	4	2
Registered Nurse	3152.1	SMD	SEP 2004	14	2	4
Reporter	5123	ISM	MAY 2005	13	4	2
Retail Salesperson	6421	MSd	SEP 2003	1	3	3
Retail Store Manager	0621	DMi	OCT 2003	1	4	2
Safety Officer	2263	MID	MAR 2005	1	3	3
Sales Representative (Wholesale, Nontechnical)	6411	SMd	OCT 2003	4	3	3
Security Guard	6651	Msd	APR 2003	1	3	3
Shipper and Receiver	1471	MOd	OCT 2005	1	3	4
Software Engineer	2173	IMD	JUL 2004	15	2	2
Technical Sales Representative	6221	OSi	OCT 2003	1	2	2
Technical Writer	5121.2	IMo	JUN 2005	1	3	2
Telemarketer	6623.4	Msd	NOV 2005	1	4	2
Tour Guide	6441.1	SMd	JUN 2003	1	3	2
Turfgrass Management Specialist	2225.2	OMD	MAR 2005	1	3	4
University Professor	4121	IDS	NOV 2005	19	3	2
Veterinarian	3114	IOs	MAR 2005	17	3	4
Volunteer Manager	4212	SMi	FEB 2005	1	3	2
Warehousing Professionals	7452.2	OMi	FEB 2006	10	3	4
Webmaster	2175	IMD	JUL 2004	13	2	2
Word Processing Operator	1411	OMi	OCT 2005	4	4	2

Occupational Profile Title	NOC Number	Interest Code	Production Date	Education Level	Outlook Level	Lifting Level
Finance, Insurance and Real Estate Industry						
Financial Transactions						
Accountant	1111.2	MID	NOV 2005	15	3	2
Accounting Technician	1231	MDi	OCT 2005	4	3	2
Banking/Investment Manager	0122.1	DMs	DEC 2005	13	3	2
Credit/Loans Manager	0122.2	DMS	NOV 2005	1	3	2
Financial Analyst	1112.1	MId	NOV 2005	15	3	2
Financial Customer Service Representative	1433	MSo	OCT 2005	4	4	2
Financial Planner	1114.1	MID	OCT 2005	1	3	2
Internal Auditor	1111.1	Mid	NOV 2005	15	3	2
Investment Advisor	1113.1	ISM	NOV 2005	13	3	2
Investment Underwriter	1114.4	MID	JAN 2003	17	3	2
Mortgage Agent	1232	MSd	FEB 2005	4	3	2
Insurance Services						
Actuary	2161.3	IMD	NOV 2005	15	3	2
Insurance Adjuster	1233.1	MSd	NOV 2005	4	3	2
Insurance Agent/Broker	6231	MSd	NOV 2005	1	3	2
Insurance Underwriter	1234	MSd	NOV 2005	1	3	2
Real Estate Services						
Assessor	1235.1	Mds	DEC 2005	13	4	2
Building Operator	6663	MOI	FEB 2005	3	4	5
Building Operator	7351	Oim	FEB 2005	3	4	5
Building Superintendent	6663	MOI	DEC 2005	1	4	4
Property Manager	1224	MDs	JAN 2006	4	3	2
Real Estate Agent	6232	SMd	DEC 2005	4	3	2
Real Estate Appraiser	1235.3	Mds	JAN 2006	1	4	2
Indirectly Related Profiles						
Administrative Assistant	1411	OMi	OCT 2005	12	4	2
Arbitrator	1121	IMS	OCT 2005	1	3	2
Building Operator	6663	MOI	FEB 2005	3	4	5
Building Operator	7351	Oim	FEB 2005	3	4	5
Call Centre Agent	1453.2	MSi	NOV 2005	1	3	2
Collection Agent	1435	MIs	NOV 2005	4	3	2
Computer and Network Operator	2281.1	OMd	JUL 2004	1	2	3
Computer Engineer	2147.1	IOD	JUL 2004	15	3	3
Computer Programmer	2174.1	IMD	JUL 2004	1	2	2
Custodian	6663	MOI	JUN 2003	1	4	4
Customer Support Analyst	2282	MSo	JUL 2004	1	2	2
Demographer	2161.2	IMD	DEC 2005	17	3	2
Economist	4162	IMD	NOV 2005	17	3	2
Health Information Management Professional	1413.3	Mid	OCT 2004	13	4	2
Human Resources Professional	1223	SMd	OCT 2005	13	3	2
Information Systems Consultant	2171.1	IMD	JUL 2004	15	2	2
Information Systems Quality Assurance Analyst	2171.3	IMD	JUL 2004	13	2	2
Interpreter	5125.3	MIs	MAR 2005	15	2	2
Lawyer	4112	MID	NOV 2005	17	3	2
Legal and Realtime Reporter	1244.1	MOi	OCT 2005	13	3	2
Legal Secretary	1242	MOd	OCT 2005	12	3	2
Librarian	5111	MSd	DEC 2005	17	4	2
Library Technician	5211.1	SMi	DEC 2005	13	4	3
Management Consultant	1122.1	IDS	NOV 2005	17	2	2
Mathematician	2161.1	IMD	NOV 2005	15	3	2
Mediator	1121	IMS	OCT 2005	1	3	2

Occupational Profile Title	NOC Number	Interest Code	Production Date	Education Level	Outlook Level	Lifting Level
Medical Transcriptionist	1244.2	MOi	NOV 2005	.12	3	2
Messenger/Courier	1463	Mos	SEP 2002	1	3	4
Operations Research Analyst	2161.2	IMD	JAN 2006	15	3	2
Paralegal	4211.1	MSI	OCT 2005	13	3	2
Private Investigator	6465.2	MIS	APR 2003	1	3	3
Private Trainer/Facilitator	1121	IMS	NOV 2005	1	3	2
Public Relations Representative	5124	IMS	DEC 2005	13	3	2
Receptionist	1414.1	SMd	OCT 2005	1	4	2
Security Guard	6651	Msd	APR 2003	1	3	3
Sign Language Interpreter	5125.3	Mls	MAR 2005	13	2	2
Software Engineer	2173	IMD	JUL 2004	15	2	2
Statistician	2161.2	IMD	DEC 2005	15	3	2
Systems Auditor	2171.4	MDI	JUL 2004	15	2	2
Systems Security Analyst	2171.2	MID	JUL 2004	13	2	2
Technical Sales Representative	6221	OSi	OCT 2003	1	2	2
Translator	5125.1	Mld	MAR 2005	15	2	2
Travel Consultant	6431	SMI	FEB 2005	1	4	2
Web Designer	2175	IMD	JUL 2004	13	2	2
Web Technician	2281.2	Omi	JUL 2004	13	2	3
Webmaster	2175	IMD	JUL 2004	13	2	2
Word Processing Operator	1411	OMi	OCT 2005	4	4	2

Food and Beverage Products Manufacturing Industry

Occupational Profile Title	NOC Number	Interest Code	Production Date	Education Level	Outlook Level	Lifting Level
Manufacturing Food and Beverage Products						
Agricultural Products Processing Machine Operator	9461.2	OMi	FEB 2005	1	3	4
Baker	6252	MOd	FEB 2006	5	4	4
Feed Mill Production Worker	9461.2	OMi	MAR 2005	1	3	4
Food and Nutrition Manager	6212	MDs	MAR 2003	13	3	3
Food Science Technologist	2211.1	OIM	MAR 2005	13	3	2
Food Scientist	2121.1	IOD	MAR 2005	15	3	2
Meat Cutter	6251	MOd	MAY 2003	1	3	4
Related Profiles						
Automated Systems Technologist	2232.1	OIM	JUL 2004	13	2	4
Chemical Technologist	2211.1	OIM	JUN 2004	13	3	2
Customs Broker	1236.1	MSd	JUN 2003	4	3	2
Dietitian	3132	DIS	MAR 2003	16	2	2
Home Economist	4164.2	IDS	MAR 2005	15	4	3
Industrial Designer	2252	IMO	JUL 2005	1	4	2
Industrial Engineer	2141	IOD	JUN 2004	15	3	2
Industrial Engineering Technologist	2233.1	IMd	OCT 2004	13	3	2
Instrument Technician	2243	OIM	FEB 2006	9	2	4
Manufacturing Engineer	2141	IOD	JUN 2004	15	3	2
Mechanical Engineer	2132	IOD	SEP 2004	15	2	2
Mechanical Engineering Technologist	2232.1	OIM	JUL 2004	13	2	3
Millwright	7311	OIM	FEB 2006	7	3	4
Operations Manager	0911	DIM	JAN 2006	1	3	2
Operations Research Analyst	2161.2	IMD	JAN 2006	15	3	2
Power Engineer	7351	Oim	JUL 2005	1	3	4
Safety Officer	2263	MID	MAR 2005	1	3	3
Sales Representative (Wholesale, Nontechnical)	6411	SMd	OCT 2003	4	3	3
Traffic Manager	0713.1	DMs	OCT 2003	1	2	2
Warehousing Professionals	7452.2	OMi	FEB 2006	10	3	4
Indirectly Related Profiles						
Accountant	1111.2	MID	NOV 2005	15	3	2
Accounting Technician	1231	MDi	OCT 2005	4	3	2
Administrative Assistant	1411	OMi	OCT 2005	12	4	2
Computer and Network Operator	2281.1	OMd	JUL 2004	1	2	3
Computer Programmer	2174.1	IMD	JUL 2004	1	2	2
Cook	6242	MOd	FEB 2006	5	3	4
Custodian	6663	MOI	JUN 2003	1	4	4
Human Resources Professional	1223	SMd	OCT 2005	13	3	2
Lawyer	4112	MID	NOV 2005	17	3	2
Management Consultant	1122.1	IDS	NOV 2005	17	2	2
Marketing Manager	0611.2	DSI	OCT 2005	13	3	2
Purchasing Agent	1225	MDs	MAY 2003	1	3	2
Receptionist	1414.1	SMd	OCT 2005	1	4	2
Security Guard	6651	Msd	APR 2003	1	3	3
Shipper and Receiver	1471	MOd	OCT 2005	1	3	4
Truck Driver	7411.1	MOd	OCT 2003	1	3	3

Forestry and Logging Industry

Occupational Profile Title	NOC Number	Interest Code	Production Date	Education Level	Outlook Level	Lifting Level
Forestry and Logging Operations						
Forest Technician	2223	DMI	JAN 2006	12	3	3
Forest Technologist	2223	DMI	JAN 2006	13	3	2
Forester	2122	ISD	JAN 2006	15	3	2
Logging/Forestry Equipment Operators	8241.1	Omi	JAN 2006	1	4	3
Profiles of Related Occupations						
Arborist	2225.1	OMd	MAR 2005	1	3	4
Biological Technician	2221.2	Moi	SEP 2005	13	3	3
College, Technical or Vocational Instructor	4131	IDS	NOV 2005	13	3	2
Conservation Officer	2224	DMS	JAN 2006	15	4	3
Environmental Auditor	2263	MID	SEP 2005	15	3	2
Environmental Engineer	2131	IOD	JUN 2004	15	2	2
Heavy Equipment Operator	7421	OMi	DEC 2003	1	2	3
Land Surveyor	2154	IOD	JUL 2004	15	3	3
Landscape Architect	2152	ISD	MAR 2005	15	3	2
Landscape Architectural Technologist	2225.4	OMD	MAR 2005	13	3	2
Landscape Gardener	2225.5	OMD	FEB 2006	5	3	5
Park Warden	2224	DMS	JAN 2006	15	4	4
Turfgrass Management Specialist	2225.2	OMD	MAR 2005	1	3	4
University Professor	4121	IDS	NOV 2005	19	3	2
Urban, Regional and Park Planners	2153	ISD	JUN 2003	15	2	2
Indirectly Related Profiles						
Accountant	1111.2	MID	NOV 2005	15	3	2
Accounting Technician	1231	MDi	OCT 2005	4	3	2
Administrative Assistant	1411	OMi	OCT 2005	12	4	2
Arbitrator	1121	IMS	OCT 2005	1	3	2
Computer and Network Operator	2281.1	OMd	JUL 2004	1	2	3
Computer Programmer	2174.1	IMD	JUL 2004	1	2	2
Computer Service Technician	2242	OIM	SEP 2004	1	3	4
Cook	6242	MOd	FEB 2006	5	3	4
Custodian	6663	MOI	JUN 2003	1	4	4
Customer Support Analyst	2282	MSo	JUL 2004	1	2	2
Dispatcher	1475.1	MDS	JUN 2003	1	3	2
Ecologist	2121.1	IOD	SEP 2005	17	3	2
Economist	4162	IMD	NOV 2005	17	3	2
Geomatics/Surveying Engineer	2131	IOD	JUL 2004	15	2	4
Geomatics/Surveying Technologist	2254.1	OIM	JUN 2004	13	3	4
Heavy Equipment Technician	7312	OMI	FEB 2006	9	3	4
Heavy Equipment Technician	7321.3	OIM	FEB 2006	9	3	4
Human Resources Professional	1223	SMd	OCT 2005	13	3	2
Industrial Engineer	2141	IOD	JUN 2004	15	3	2
Industrial Engineering Technologist	2233.1	IMd	OCT 2004	13	3	2
Information Systems Consultant	2171.1	IMD	JUL 2004	15	2	2
Internal Auditor	1111.1	Mid	NOV 2005	15	3	2
Lawyer	4112	MID	NOV 2005	17	3	2
Legal Secretary	1242	MOd	OCT 2005	12	3	2
Management Consultant	1122.1	IDS	NOV 2005	17	2	2
Marketing Manager	0611.2	DSI	OCT 2005	13	3	2
Occupational Hygienist	4161.2	IDM	MAR 2005	15	3	2
Operations Manager	0911	DIM	JAN 2006	1	3	2
Public Relations Representative	5124	IMS	DEC 2005	13	3	2
Purchasing Agent	1225	MDs	MAY 2003	1	3	2
Receptionist	1414.1	SMd	OCT 2005	1	4	2
Safety Officer	2263	MID	MAR 2005	1	3	3

Occupational Profile Title	NOC Number	Interest Code	Production Date	Education Level	Outlook Level	Lifting Level
Security Guard	6651	Msd	APR 2003	1	3	3
Shipper and Receiver	1471	MOd	OCT 2005	1	3	4
Technical Sales Representative	6221	OSi	OCT 2003	1	2	2
Technical Writer	5121.2	IMo	JUN 2005	1	3	2
Truck Driver	7411.1	MOd	OCT 2003	1	3	3
Warehousing Professionals	7452.2	OMi	FEB 2006	10	3	4
Web Designer	2175	IMD	JUL 2004	13	2	2
Webmaster	2175	IMD	JUL 2004	13	2	2
Word Processing Operator	1411	OMi	OCT 2005	4	4	2

Health Care and Social Assistance Industry

Diagnosis and Treatment

Occupational Profile Title	NOC Number	Interest Code	Production Date	Education Level	Outlook Level	Lifting Level
Acupuncturist	3232.2	SIM	MAR 2005	14	3	3
Addictions Counsellor	4153	SId	DEC 2005	13	3	2
Athletic Therapist	3144	SIM	MAR 2005	15	2	4
Audiologist	3141.1	OIS	DEC 2004	17	2	2
Cardiology Technologist	3217	OMi	NOV 2004	12	2	4
Chiropractic Assistant	3414.2	MSo	DEC 2004	4	3	3
Chiropractor	3122	ISM	DEC 2004	18	2	4
Combined Laboratory and X-Ray Technologist	3211.1	MIO	FEB 2005	13	2	4
Combined Laboratory and X-Ray Technologist	3215.1	OMi	FEB 2005	13	2	4
Community Health Nurse	3152.3	DMD	SEP 2004	14	2	2
Dental Assistant	3411	MSO	OCT 2004	12	2	2
Dental Hygienist	3222.1	MOS	NOV 2004	14	3	3
Dentist	3113	IOs	NOV 2004	17	2	2
Diagnostic Medical Sonographer	3216	OMi	DEC 2004	14	2	3
Dietitian	3132	DIS	MAR 2003	16	2	2
Electroneurophysiology (ENP) Technologist	3218.1	OMi	NOV 2004	13	2	3
Emergency Medical Responder	3234	IMO	NOV 2004	4	3	4
Emergency Medical Technician - Ambulance	3234	IMO	NOV 2004	12	3	4
Emergency Medical Technologist - Paramedic	3234	IMO	NOV 2004	13	3	4
Expressive Arts Therapists	3144	SIM	JAN 2005	17	2	1
Geriatric Medicine Specialist	3111.1	ISD	DEC 2004	19	2	2
Gerontological Specialist	4169.9	IDM	NOV 2004	1	3	2
Herbalist	3232.4	SID	JAN 2005	1	3	3
Homeopath	3232.5	SID	OCT 2004	16	3	2
Licensed Practical Nurse	3233.1	MSO	SEP 2004	12	2	4
Licensed Practical Nurse (Advanced Orthopaedic Specialty)	3233.1	MSO	SEP 2004	13	2	4
Magnetic Resonance Technologist	3215	OMI	JUL 2005	13	2	4
Massage Therapist	3235.4	MSO	NOV 2004	1	3	3
Medical Laboratory Technologist	3211.1	MIO	FEB 2005	13	2	3
Mental Health Worker	4212	SMi	JUN 2005	13	3	2
Midwife	3232.1	SID	JAN 2005	15	3	4
Naturopathic Doctor	3123.3	IMS	FEB 2005	18	2	3
Nuclear Medicine Technologist	3215.2	OMi	NOV 2004	13	2	4
Nurse Practitioner	3152	SMD	OCT 2004	17	2	3
Occupational Health Nurse	3152.2	SMD	SEP 2004	14	2	3
Occupational Therapist	3143	SIM	FEB 2005	15	2	4
Occupational Therapist Assistant	3414.2	MSo	DEC 2004	13	3	4
Optometrist	3121	OSD	JAN 2005	17	2	2
Pathologist	3111.2	IOD	DEC 2004	19	2	2
Pediatrician	3111.1	ISD	NOV 2004	19	2	3
Personal Care Attendant	3413	SMo	JAN 2005	2	3	4
Personal Care Attendant	6471.1	SMo	JAN 2005	2	3	4
Pharmacist	3131.1	MID	MAR 2005	16	2	3
Pharmacy Assistant/Technician	3414.4	MIO	JAN 2005	1	3	3
Physical Therapy Assistant	3414.2	MSo	DEC 2004	1	3	4
Physician	3112	ISD	NOV 2004	19	2	3
Physiotherapist	3142	MIS	FEB 2005	17	2	4
Podiatrist	3123.1	IMO	FEB 2005	19	2	2
Psychiatric Aide	3413	SMo	FEB 2005	1	2	4

Occupational Profile Title	NOC Number	Interest Code	Production Date	Education Level	Outlook Level	Lifting Level
Psychiatric Nurse	3152.4	SMD	SEP 2004	13	2	4
Psychiatrist	3111.1	ISD	OCT 2004	19	2	2
Psychologist	4151	SIM	JUL 2005	17	3	2
Radiation Therapist	3215.3	OMi	DEC 2004	13	2	3
Radiological Technologist	3215.1	OMi	JAN 2005	13	2	3
Recreation Therapist	3144	SIM	FEB 2005	13	2	3
Reflexologist	3232.6	SIM	NOV 2004	1	3	2
Registered Nurse	3152.1	SMD	SEP 2004	14	2	4
Rehabilitation Practitioner	4212	SMi	FEB 2005	13	3	2
Respiratory Therapist	3214.1	OMi	JAN 2005	14	2	3
Speech-Language Pathologist	3141.2	MIS	DEC 2004	17	2	2
Sport Medicine Physician	3112	ISD	DEC 2004	19	2	3
Social Assistance Services						
Child and Youth Care Worker	4212	SMi	NOV 2005	12	3	4
Community Health Representative	4212	SMi	APR 2005	12	3	2
Early Childhood Educator	4214.1	SMd	NOV 2005	12	3	4
Recreation Co-ordinator/Supervisor	4167.5	SDI	MAR 2005	13	3	4
Social Worker	4152	SID	DEC 2005	13	3	2
Volunteer Manager	4212	SMi	FEB 2005	1	3	2
Related Profiles						
Biologist	2121.1	IOD	JAN 2005	15	3	2
Biomedical Engineering Technologist	2241.1	OIM	JUN 2004	13	2	4
Biotechnologist	2121.2	IOD	SEP 2005	15	3	2
Career Development Professional	4213	SMI	NOV 2005	1	3	2
College, Technical or Vocational Instructor	4131	IDS	NOV 2005	13	3	2
Correctional Services Worker	4155.2	SMI	APR 2003	13	3	3
Dental Technologist	3223.1	MOI	DEC 2004	13	3	4
Denturist	3221	MOI	NOV 2004	13	3	2
Educational Counsellor	4143	SId	JAN 2006	17	3	2
Executive Housekeeper	6213	MDs	MAY 2003	1	3	2
Family/Marriage Counsellor	4153	SId	DEC 2005	17	3	2
Food and Nutrition Manager	6212	MDs	MAR 2003	13	3	3
Fundraiser	5124	IMS	FEB 2005	1	3	2
Geneticist	2121.2	IOD	NOV 2005	17	3	2
Health Information Management Professional	1413.3	Mid	OCT 2004	13	4	2
Health Service Administrator	0311	DMI	FEB 2005	1	3	2
Hearing Aid Practitioner	3235.1	MSO	SEP 2003	13	3	2
Kinesiologist	4167.1	SDI	MAR 2005	15	3	4
Life Skills Coach	4212	SMi	SEP 2003	1	3	2
Medical Secretary	1243	SOd	OCT 2005	12	2	3
Medical Transcriptionist	1244.2	MOi	NOV 2005	12	3	2
Ophthalmic Assistant	3235.5	MSO	JAN 2005	4	3	2
Optical Technician	3414.3	OMi	FEB 2005	1	3	2
Optician	3231	OMS	FEB 2005	4	3	2
Parole/Probation Officer	4155.1	SMD	APR 2003	13	3	2
Pharmacologist	2121.2	IOD	FEB 2005	15	3	2
Physiologist	2121.1	IOD	APR 2005	19	3	2
Prosthetic/Orthotic Technician	3219.4	OIM	MAR 2005	13	2	4
Prosthetist and Orthotist	3219.3	OID	MAR 2005	13	2	4
Recreation Therapist	3144	SIM	FEB 2005	13	2	3
Religious Leader	4154	SMI	NOV 2002	1	4	2
Special Needs Teacher	4142	SID	JAN 2006	15	3	2
Sterile Processing Technician	3414.5	OMi	AUG 2003	4	3	3
Toxicologist	2121.2	IOD	FEB 2005	15	3	2
Unit Clerk	1243	SOd	OCT 2005	4	2	3
University Professor	4121	IDS	NOV 2005	19	3	2
Volunteer Manager	4212	SMi	FEB 2005	1	3	2

Occupational Profile Title	NOC Number	Interest Code	Production Date	Education Level	Outlook Level	Lifting Level
Indirectly Related Profiles						
Accountant	1111.2	MID	NOV 2005	15	3	2
Accounting Technician	1231	MDi	OCT 2005	4	3	2
Administrative Assistant	1411	OMi	OCT 2005	12	4	2
Baker	6252	MOd	FEB 2006	5	4	4
Biochemist	2112	IOD	SEP 2005	15	3	2
Biological Technician	2221.2	Moi	SEP 2005	13	3	3
Building Operator	6663	MOI	FEB 2005	3	4	5
Building Operator	7351	Oim	FEB 2005	3	4	5
Bus Driver	7412.1	OMS	SEP 2003	1	3	4
Canadian Forces Personnel - Commissioned Officer	0643	DMs	JAN 2005	1	1	1
Cashier	6611	MOs	OCT 2003	1	4	3
Chef	6241.1	DMI	MAR 2003	1	3	3
Chemical Technologist	2211.1	OIM	JUN 2004	13	3	2
Chemist	2112	IOD	JUL 2004	15	3	2
Child and Youth Care Worker	4212	SMi	NOV 2005	12	3	4
Civil Engineer	2131	IOD	JUN 2004	15	2	1
Civil Engineering Technologist	2231.1	IMd	JUN 2004	13	2	3
Collection Agent	1435	MIs	NOV 2005	4	3	2
College, Technical or Vocational Instructor	4131	IDS	NOV 2005	13	3	2
Computer and Network Operator	2281.1	OMd	JUL 2004	1	2	3
Computer Engineer	2147.1	IOD	JUL 2004	15	3	3
Computer Programmer	2174.1	IMD	JUL 2004	1	2	2
Computer Service Technician	2242	OIM	SEP 2004	1	3	4
Cook	6242	MOd	FEB 2006	5	3	4
Custodian	6663	MOI	JUN 2003	1	4	4
Customer Support Analyst	2282	MSo	JUL 2004	1	2	2
Demographer	2161.2	IMD	DEC 2005	17	3	2
Dispatcher	1475.1	MDS	JUN 2003	1	3	2
Dry Cleaning and Laundry Workers	6681.1	OMd	SEP 2003	1	3	3
Early Childhood Educator	4214.1	SMd	NOV 2005	12	3	4
Economist	4162	IMD	NOV 2005	17	3	2
Electronics Engineering Technologist	2241.1	OIM	SEP 2004	13	2	4
Ergonomist	4161.1	IDM	JAN 2006	15	3	2
Fitness Instructor	5254	MSi	MAR 2005	4	2	4
Food Scientist	2121.1	IOD	MAR 2005	15	3	2
Food Service Helper	6641.3	OMs	MAR 2003	1	3	4
Food Service Supervisor	6212	MDs	MAR 2003	4	3	3
Hairstylist	6271.1	IOS	FEB 2006	6	4	2
Helicopter Pilot	2271.1	OID	SEP 2003	1	3	4
Human Resources Professional	1223	SMd	OCT 2005	13	3	2
Illustrator	5241.2	IMS	JUN 2005	1	3	2
Industrial Engineer	2141	IOD	JUN 2004	15	3	2
Industrial Engineering Technologist	2233.1	IMd	OCT 2004	13	3	2
Information Systems Consultant	2171.1	IMD	JUL 2004	15	2	2
Insurance Adjuster	1233.1	MSd	NOV 2005	4	3	2
Interior Designer	5242	IMS	MAR 2005	15	3	2
Internal Auditor	1111.1	Mid	NOV 2005	15	3	2
Interpreter	5125.3	MIs	MAR 2005	15	2	2
Kitchen Helper and Food Assembler	6641.2	OMs	MAR 2003	1	3	4
Landscape Gardener	2225.5	OMD	FEB 2006	5	3	5
Lawyer	4112	MID	NOV 2005	17	3	2
Librarian	5111	MSd	DEC 2005	17	4	2
Library Technician	5211.1	SMi	DEC 2005	13	4	3
Management Consultant	1122.1	IDS	NOV 2005	17	2	2
Mediator	1121	IMS	OCT 2005	1	3	2
Microbiologist	2121.2	IOD	SEP 2005	15	3	2

Occupational Profile Title	NOC Number	Interest Code	Production Date	Education Level	Outlook Level	Lifting Level
Occupational Health and Safety Inspector	2263	MID	MAR 2005	1	3	2
Occupational Hygienist	4161.2	IDM	MAR 2005	15	3	2
Operations Research Analyst	2161.2	IMD	JAN 2006	15	3	2
Paralegal	4211.1	MSI	OCT 2005	13	3	2
Physicist	2111.1	IOD	DEC 2005	15	3	2
Power Engineer	7351	Oim	JUL 2005	1	3	4
Private Trainer/Facilitator	1121	IMS	NOV 2005	1	3	2
Public Health Inspector	2263	MID	DEC 2003	15	3	3
Public Relations Representative	5124	IMS	DEC 2005	13	3	2
Purchasing Agent	1225	MDs	MAY 2003	1	3	2
Receptionist	1414.1	SMd	OCT 2005	1	4	2
Recreation and Sport Administrator	0513	DMI	MAR 2005	15	3	2
Recreation Co-ordinator/Supervisor	4167.5	SDI	MAR 2005	13	3	4
Religious Leader	4154	SMI	NOV 2002	1	4	2
Safety Officer	2263	MID	MAR 2005	1	3	3
Sales Representative (Wholesale, Nontechnical)	6411	SMd	OCT 2003	4	3	3
Security Guard	6651	Msd	APR 2003	1	3	3
Shipper and Receiver	1471	MOd	OCT 2005	1	3	4
Sign Language Interpreter	5125.3	MIs	MAR 2005	13	2	2
Social Worker	4152	SID	DEC 2005	13	3	2
Software Engineer	2173	IMD	JUL 2004	15	2	2
Special Needs Teacher	4142	SID	JAN 2006	15	3	2
Statistician	2161.2	IMD	DEC 2005	15	3	2
Technical Sales Representative	6221	OSi	OCT 2003	1	2	2
Technical Writer	5121.2	IMo	JUN 2005	1	3	2
Translator	5125.1	MId	MAR 2005	15	2	2
Truck Driver	7411.1	MOd	OCT 2003	1	3	3
University Professor	4121	IDS	NOV 2005	19	3	2
Warehousing Professionals	7452.2	OMi	FEB 2006	10	3	4
Webmaster	2175	IMD	JUL 2004	13	2	2
Word Processing Operator	1411	OMi	OCT 2005	4	4	2

Occupational Profile Title	NOC Number	Interest Code	Production Date	Education Level	Outlook Level	Lifting Level
Information, Culture and Recreation Industry						
Information Services						
Archivist	5113	MIS	DEC 2005	17	4	2
Data Administrator	2172.2	IMD	JUL 2004	13	2	2
Database Analyst	2172.1	IMD	JUL 2004	13	2	2
Geomatics/Surveying Engineer	2131	IOD	JUL 2004	15	2	4
Librarian	5111	MSd	DEC 2005	17	4	2
Library Clerk	1451	MSo	DEC 2005	4	3	3
Library Technician	5211.1	SMi	DEC 2005	13	4	3
Web Designer	2175	IMD	JUL 2004	13	2	2
Webmaster	2175	IMD	JUL 2004	13	2	2
Publishing, Motion Picture/Sound Recording, Broadcasting and Telecommunications						
Advertising Copywriter	5121.3	IMd	MAY 2005	1	3	2
Animator	5241.1	IMS	MAY 2005	1	3	2
Announcer	5231	MSI	MAY 2003	12	3	3
Broadcast Maintenance Technologist	5224	OMi	JUL 2004	13	3	2
Cartoonist	5241.1	IMS	MAY 2005	1	3	2
Casting Director	5226.7	DMO	MAY 2003	1	3	2
Cinematographer	5131.7	DIO	MAY 2003	1	3	2
Critic	5123	ISM	MAY 2005	1	4	2
Editor	5122	DIS	JUL 2005	15	3	2
Electronics Assemblers and Fabricators	9483.1	OMi	SEP 2003	1	2	2
Film Director	5131.2	IDS	OCT 2003	15	3	2
Graphic Designer	5241.1	IMS	MAY 2005	13	3	2
Illustrator	5241.2	IMS	JUN 2005	1	3	2
Lighting Technician	5226.3	OMi	JUL 2005	1	3	4
Make-Up Artist	5226.5	OMI	MAY 2003	1	3	3
Photographer	5221	IMO	JUN 2005	1	3	3
Photographic Processing Technician	9474	OMI	MAY 2005	1	4	2
Producer - Film, Radio, Television and Theatre	5131.1	IDS	MAY 2003	1	3	2
Recording/Sound Engineer	5225	OMI	MAY 2003	1	3	2
Reporter	5123	ISM	MAY 2005	13	4	2
Stage Manager	5226.7	DMO	JUN 2002	1	3	2
Technical Writer	5121.2	IMo	JUN 2005	1	3	2
Telecommunications Engineering Technologist	2241.1	OIM	FEB 2004	13	2	4
Telephone Operator	1424	MSO	SEP 2002	4	4	2
Television Audio/Video Operator	5225	OMI	APR 2003	13	3	2
Television Camera Operator	5222	OMI	APR 2003	13	3	4
Traffic Co-ordinator	1473	MIs	MAY 2003	4	3	2
Utility Clerk	1453.2	MSi	NOV 2005	4	3	2
Production, Preservation and Exhibition						
Conservator	5112.1	Dim	MAY 2003	15	4	4
Craftsperson	5244	IOM	OCT 2003	1	3	2
Curator	5112.2	DMI	SEP 2003	15	4	4
Exhibit Designer	5243.3	IMD	OCT 2003	1	3	3
Heritage Interpreter	5212.3	SMd	NOV 2003	13	4	2
Museum Technician	5212.6	OMi	OCT 2003	13	4	4
Painter/Printmaker	5136.1	IOm	JUL 2005	1	3	2
Sculptor	5136.2	IOm	JUN 2005	1	3	3
Live Performance						

Occupational Profile Title	NOC Number	Interest Code	Production Date	Education Level	Outlook Level	Lifting Level
Actor	5135.1	MId	MAY 2003	1	3	3
Choral Conductor	5132.1	DIM	MAY 2003	1	3	2
Choreographer	5131.3	IDS	JUL 2003	1	3	3
Composer	5132.2	IMd	MAY 2003	1	3	2
Costume Designer	5243.1	IMD	FEB 2004	1	3	2
Dancer	5134.1	Mid	JUL 2003	1	3	4
Instrumental Musician	5133.1	OMI	MAY 2003	1	3	3
Lighting Designer	5243.1	IMD	FEB 2004	1	3	2
Lighting Technician	5226.3	OMi	JUL 2005	1	3	4
Make-Up Artist	5226.5	OMI	MAY 2003	1	3	3
Model	5232.4	SMi	APR 2005	1	3	2
Music Copyist	5132.3	DIm	MAY 2003	1	3	2
Orchestra/Band Conductor	5132.1	DIM	MAY 2003	15	3	2
Orchestrator/Arranger	5132.3	DIm	MAY 2003	1	3	2
Recording/Sound Engineer	5225	OMI	MAY 2003	1	3	2
Set Designer	5243.1	IMD	FEB 2004	1	3	2
Singer	5133.2	Mid	MAY 2003	1	3	2
Songwriter	5132.2	IMd	MAY 2003	1	3	2
Stage Manager	5226.7	DMO	JUN 2002	1	3	2
Theatre Director	5131.2	IDS	SEP 2003	15	3	2
Recreation and Sport						
Athletic Therapist	3144	SIM	MAR 2005	15	2	4
Coach	5252.1	DSM	MAR 2005	1	3	2
Fitness Instructor	5254	MSi	MAR 2005	4	2	4
Golf Professional	5254	MSi	MAR 2005	14	2	4
Outdoor Sport/Recreation Guide	6442	SMO	MAY 2005	1	3	4
Professional Athlete	5251	Mdi	MAR 2005	1	3	4
Recreation and Sport Administrator	0513	DMI	MAR 2005	15	3	2
Recreation Co-ordinator/Supervisor	4167.5	SDI	MAR 2005	13	3	4
Recreation Facility Operator	6671.2	MOS	MAR 2005	1	3	4
Sports Instructor	5254	MSi	MAR 2005	1	2	4
Sports Official	5253	MDs	MAR 2005	1	3	2
Other Profiles Related to Information, Culture and Recreation						
Fashion Designer	5243.2	IMD	APR 2005	12	3	2
Industrial Designer	2252	IMO	JUL 2005	1	4	2
Interior Decorator	6421	MSd	MAR 2005	1	3	3
Interior Designer	5242	IMS	MAR 2005	15	3	2
Kinesiologist	4167.1	SDI	MAR 2005	15	3	4
Special Event Co-ordinator	1226	DSI	APR 2003	13	3	2
Tour Guide	6441.1	SMd	JUN 2003	1	3	2
Travel Guide	6441.2	SMd	MAY 2003	1	3	4
University Professor	4121	IDS	NOV 2005	19	3	2
Visual Merchandiser	5243.3	IMD	MAY 2003	1	3	2
Indirectly Related Profiles						
Accountant	1111.2	MID	NOV 2005	15	3	2
Accounting Technician	1231	MDi	OCT 2005	4	3	2
Administrative Assistant	1411	OMi	OCT 2005	12	4	2
Animal Care Attendant	6483	MOD	FEB 2005	1	3	4
Animal Health Technologist	3213	MOI	FEB 2005	13	3	4
Building Operator	6663	MOI	FEB 2005	3	4	5
Building Operator	7351	Oim	FEB 2005	3	4	5
Call Centre Agent	1453.2	MSi	NOV 2005	1	3	2
Cashier	6611	MOs	OCT 2003	1	4	3
Collection Agent	1435	MIs	NOV 2005	4	3	2
Commercial Diver	7382	OIM	AUG 2005	12	3	4
Computer Engineer	2147.1	IOD	JUL 2004	15	3	3

Occupational Profile Title	NOC Number	Interest Code	Production Date	Education Level	Outlook Level	Lifting Level
Computer Programmer	2174.1	IMD	JUL 2004	1	2	2
Computer Service Technician	2242	OIM	SEP 2004	1	3	4
Custodian	6663	MOI	JUN 2003	1	4	4
Customer Support Analyst	2282	MSo	JUL 2004	1	2	2
Demographer	2161.2	IMD	DEC 2005	17	3	2
Dispatcher	1475.1	MDS	JUN 2003	1	3	2
Ecologist	2121.1	IOD	SEP 2005	17	3	2
Economist	4162	IMD	NOV 2005	17	3	2
Electrical Engineer	2133	IOD	AUG 2004	15	2	3
Electrical Engineering Technologist	2241.1	OIM	SEP 2004	13	2	4
Elevator Constructor	7318	OMI	FEB 2006	8	3	4
Farm Worker/Technician	8431	MOi	FEB 2005	1	4	4
Financial Analyst	1112.1	MId	NOV 2005	15	3	2
Fundraiser	5124	IMS	FEB 2005	1	3	2
Human Resources Professional	1223	SMd	OCT 2005	13	3	2
Information Systems Consultant	2171.1	IMD	JUL 2004	15	2	2
Internal Auditor	1111.1	Mid	NOV 2005	15	3	2
Interpreter	5125.3	MIs	MAR 2005	15	2	2
Landscape Architectural Technologist	2225.4	OMD	MAR 2005	13	3	2
Landscape Gardener	2225.5	OMD	FEB 2006	5	3	5
Lawyer	4112	MID	NOV 2005	17	3	2
Legal Secretary	1242	MOd	OCT 2005	12	3	2
Management Consultant	1122.1	IDS	NOV 2005	17	2	2
Marketing Manager	0611.2	DSI	OCT 2005	13	3	2
Musical Instrument Repair Technician	7445	OMi	MAY 2003	4	3	3
Physicist	2111.1	IOD	DEC 2005	15	3	2
Power Engineer	7351	Oim	JUL 2005	1	3	4
Private Trainer/Facilitator	1121	IMS	NOV 2005	1	3	2
Property Manager	1224	MDs	JAN 2006	4	3	2
Public Relations Representative	5124	IMS	DEC 2005	13	3	2
Purchasing Agent	1225	MDs	MAY 2003	1	3	2
Receptionist	1414.1	SMd	OCT 2005	1	4	2
Safety Officer	2263	MID	MAR 2005	1	3	3
Sales Representative (Wholesale, Nontechnical)	6411	SMd	OCT 2003	4	3	3
Security Guard	6651	Msd	APR 2003	1	3	3
Shipper and Receiver	1471	MOd	OCT 2005	1	3	4
Sign Language Interpreter	5125.3	MIs	MAR 2005	13	2	2
Technical Sales Representative	6221	OSi	OCT 2003	1	2	2
Translator	5125.1	MId	MAR 2005	15	2	2
Truck Driver	7411.1	MOd	OCT 2003	1	3	3
Turfgrass Management Specialist	2225.2	OMD	MAR 2005	1	3	4
Volunteer Manager	4212	SMi	FEB 2005	1	3	2
Warehousing Professionals	7452.2	OMi	FEB 2006	10	3	4

Occupational Profile Title	NOC Number	Interest Code	Production Date	Education Level	Outlook Level	Lifting Level
Management, Administrative and Other Support Services Industry						
Business Administration Services						
Accountant	1111.2	MID	NOV 2005	15	3	2
Accounting Technician	1231	MDi	OCT 2005	4	3	2
Administrative Assistant	1411	OMi	OCT 2005	12	4	2
Call Centre Agent	1453.2	MSi	NOV 2005	1	3	2
Collection Agent	1435	MIs	NOV 2005	4	3	2
Fundraiser	5124	IMS	FEB 2005	1	3	2
Human Resources Professional	1223	SMd	OCT 2005	13	3	2
Property Manager	1224	MDs	JAN 2006	4	3	2
Public Relations Representative	5124	IMS	DEC 2005	13	3	2
Receptionist	1414.1	SMd	OCT 2005	1	4	2
Shipper and Receiver	1471	MOd	OCT 2005	1	3	4
Warehousing Professionals	7452.2	OMi	FEB 2006	10	3	4
Word Processing Operator	1411	OMi	OCT 2005	4	4	2
Cleaning and Maintenance Services						
Auto Detailer	6662.5	OMd	JAN 2004	3	4	3
Building Superintendent	6663	MOI	DEC 2005	1	4	4
Carpet and Upholstery Cleaner	6662.1	OMd	JUN 2003	1	4	4
Custodian	6663	MOI	JUN 2003	1	4	4
Travel Services						
Airline Ticket Agent	6433.1	MSO	OCT 2003	4	3	2
Tour Guide	6441.1	SMd	JUN 2003	1	3	2
Travel Consultant	6431	SMI	FEB 2005	1	4	2
Travel Guide	6441.2	SMd	MAY 2003	1	3	4
Waste Collection, Recovery and Remediation Services						
Ecologist	2121.1	IOD	SEP 2005	17	3	2
Environmental Engineer	2131	IOD	JUN 2004	15	2	2
Hazardous Waste Management Technologist	2263	MID	SEP 2005	13	3	4
Municipal Recycling Truck Driver	7411.2	MOd	JUN 2003	1	3	4
Municipal Recycling Waste Handler	9619	MOi	JUN 2003	1	4	4
Pollution Control Technologist	2211.1	OIM	SEP 2005	13	3	4
Refuse Collector	7621	Moi	JUN 2003	1	4	4
Refuse Truck Driver	7422	OMi	JUN 2003	1	4	4
Toxicologist	2121.2	IOD	FEB 2005	15	3	2
Other Support Services						
Landscape Gardener	2225.5	OMD	FEB 2006	5	3	5
Locksmith	7383.2	OMi	FEB 2006	6	4	3
Pest Control Operator	7444	OMi	MAR 2005	1	4	4
Private Investigator	6465.2	MIS	APR 2003	1	3	3
Security Guard	6651	Msd	APR 2003	1	3	3
Special Event Co-ordinator	1226	DSI	APR 2003	13	3	2

Metals, Metal Fabrication and Machinery Manufacturing Industry

Occupational Profile Title	NOC Number	Interest Code	Production Date	Education Level	Outlook Level	Lifting Level
Making Metal Products						
Boilermaker	7262	OMI	FEB 2006	7	2	4
Farrier	7266.1	OMI	MAY 2005	1	4	4
Machinist	7231.1	OIM	FEB 2006	7	2	4
Sheet Metal Worker	7261	OMI	FEB 2006	9	3	4
Steel Detailer	2253.1	MIO	FEB 2006	10	3	2
Steel Detailer	2253.2	MIO	FEB 2006	10	3	2
Structural Steel and Plate Fitter	7263	OMI	FEB 2006	5	2	4
Tool and Die Maker	7232.1	OIM	FEB 2006	7	3	4
Welder	7265.1	OMI	FEB 2006	5	2	1
Related Profiles						
Automated Systems Technologist	2232.1	OIM	JUL 2004	13	2	4
Drafting Technician	2253.2	MIO	AUG 2005	12	3	2
Engineering Design and Drafting Technologist	2253.1	MIO	AUG 2005	13	3	2
Industrial Engineer	2141	IOD	JUN 2004	15	3	2
Industrial Engineering Technologist	2233.1	IMd	OCT 2004	13	3	2
Manufacturing Engineer	2141	IOD	JUN 2004	15	3	2
Materials Engineering Technologist	2233.1	IMd	JUL 2004	13	3	4
Materials/Metallurgical Engineer	2142	IOD	JUL 2004	15	3	3
Mechanical Engineer	2132	IOD	SEP 2004	15	2	2
Mechanical Engineering Technologist	2232.1	OIM	JUL 2004	13	2	3
Millwright	7311	OIM	FEB 2006	7	3	4
Safety Officer	2263	MID	MAR 2005	1	3	3
Indirectly Related Profiles						
Accountant	1111.2	MID	NOV 2005	15	3	2
Accounting Technician	1231	MDi	OCT 2005	4	3	2
Administrative Assistant	1411	OMi	OCT 2005	12	4	2
Crane and Hoisting Equipment Operator	7371	OMi	FEB 2006	6	2	5
Custodian	6663	MOI	JUN 2003	1	4	4
Heavy Equipment Operator	7421	OMi	DEC 2003	1	2	3
Human Resources Professional	1223	SMd	OCT 2005	13	3	2
Occupational Hygienist	4161.2	IDM	MAR 2005	15	3	2
Public Relations Representative	5124	IMS	DEC 2005	13	3	2
Security Guard	6651	Msd	APR 2003	1	3	3
Shipper and Receiver	1471	MOd	OCT 2005	1	3	4

Mineral Products Manufacturing Industry

Occupational Profile Title	NOC Number	Interest Code	Production Date	Education Level	Outlook Level	Lifting Level
Related Profiles						
Automated Systems Technologist	2232.1	OIM	JUL 2004	13	2	4
Concrete Finisher	7282	OMi	FEB 2006	5	3	4
Craftsperson	5244	IOM	OCT 2003	1	3	2
Glazier	7292	MOI	FEB 2006	5	3	5
Industrial Engineer	2141	IOD	JUN 2004	15	3	2
Industrial Engineering Technologist	2233.1	IMd	OCT 2004	13	3	2
Instrument Technician	2243	OIM	FEB 2006	9	2	4
Manufacturing Engineer	2141	IOD	JUN 2004	15	3	2
Materials Engineering Technologist	2233.1	IMd	JUL 2004	13	3	4
Materials/Metallurgical Engineer	2142	IOD	JUL 2004	15	3	3
Millwright	7311	OIM	FEB 2006	7	3	4
Operations Manager	0911	DIM	JAN 2006	1	3	2
Operations Research Analyst	2161.2	IMD	JAN 2006	15	3	2
Safety Officer	2263	MID	MAR 2005	1	3	3
Warehousing Professionals	7452.2	OMi	FEB 2006	10	3	4
Indirectly Related Profiles						
Accountant	1111.2	MID	NOV 2005	15	3	2
Accounting Technician	1231	MDi	OCT 2005	4	3	2
Administrative Assistant	1411	OMi	OCT 2005	12	4	2
Crane and Hoisting Equipment Operator	7371	OMi	FEB 2006	6	2	5
Custodian	6663	MOI	JUN 2003	1	4	4
Heavy Equipment Operator	7421	OMi	DEC 2003	1	2	3
Security Guard	6651	Msd	APR 2003	1	3	3
Shipper and Receiver	1471	MOd	OCT 2005	1	3	4
Truck Driver	7411.1	MOd	OCT 2003	1	3	3

Occupational Profile Title	NOC Number	Interest Code	Production Date	Education Level	Outlook Level	Lifting Level
Mining Industry						
Mining Operations						
Blaster	7372.2	OID	MAR 2005	1	2	4
Exploration Geophysicist	2113	IOD	JUN 2004	15	3	4
Geological and Geophysical Technologist	2212.1	OId	OCT 2004	13	3	4
Geologist	2113	IOD	JUN 2004	15	3	2
Hydrometric Technician/Technologist	2212.1	OId	SEP 2005	13	3	3
Meteorologist	2114	IOD	OCT 2005	15	3	2
Mining Engineer	2143	IOD	JUL 2004	15	3	3
Seismic Observer	2212.2	OMi	SEP 2005	1	3	4
Seismic Worker	8615	MOi	SEP 2005	1	2	4
Surface Mining Equipment Operator	7421	OMi	AUG 2005	1	2	4
Underground Miner	8231	OIM	AUG 2005	1	4	4
Other Profiles Related to Mining						
Geomatics/Surveying Engineer	2131	IOD	JUL 2004	15	2	4
Geomatics/Surveying Technologist	2254.1	OIM	JUN 2004	13	3	4
Heavy Equipment Operator	7421	OMi	DEC 2003	1	2	3
Hydrologist	2113	IOD	SEP 2005	15	3	4
Industrial Engineer	2141	IOD	JUN 2004	15	3	2
Industrial Engineering Technologist	2233.1	IMd	OCT 2004	13	3	2
Land Surveyor	2154	IOD	JUL 2004	15	3	3
Materials/Metallurgical Engineer	2142	IOD	JUL 2004	15	3	3
Safety Officer	2263	MID	MAR 2005	1	3	3
Truck Driver	7411.1	MOd	OCT 2003	1	3	3
Indirectly Related Profiles						
Accountant	1111.2	MID	NOV 2005	15	3	2
Accounting Technician	1231	MDi	OCT 2005	4	3	2
Administrative Assistant	1411	OMi	OCT 2005	12	4	2
Bus Driver	7412.1	OMS	SEP 2003	1	3	4
Chef	6241.1	DMI	MAR 2003	1	3	3
Computer and Network Operator	2281.1	OMd	JUL 2004	1	2	3
Concrete Finisher	7282	OMi	FEB 2006	5	3	4
Cook	6242	MOd	FEB 2006	5	3	4
Custodian	6663	MOI	JUN 2003	1	4	4
Customs Broker	1236.1	MSd	JUN 2003	4	3	2
Data Administrator	2172.2	IMD	JUL 2004	13	2	2
Database Analyst	2172.1	IMD	JUL 2004	13	2	2
Ecologist	2121.1	IOD	SEP 2005	17	3	2
Heavy Equipment Technician	7312	OMI	FEB 2006	9	3	4
Heavy Equipment Technician	7321.3	OIM	FEB 2006	9	3	4
Human Resources Professional	1223	SMd	OCT 2005	13	3	2
Information Systems Consultant	2171.1	IMD	JUL 2004	15	2	2
Information Systems Quality Assurance Analyst	2171.3	IMD	JUL 2004	13	2	2
Instrument Technician	2243	OIM	FEB 2006	9	2	4
Internal Auditor	1111.1	Mid	NOV 2005	15	3	2
Lawyer	4112	MID	NOV 2005	17	3	2
Legal Secretary	1242	MOd	OCT 2005	12	3	2
Marketing Manager	0611.2	DSI	OCT 2005	13	3	2
Occupational Hygienist	4161.2	IDM	MAR 2005	15	3	2
Operations Manager	0911	DIM	JAN 2006	1	3	2
Paralegal	4211.1	MSI	OCT 2005	13	3	2
Parts Technician	1472	MOS	FEB 2006	6	3	3
Power Engineer	7351	Oim	JUL 2005	1	3	4
Public Relations Representative	5124	IMS	DEC 2005	13	3	2

Occupational Profile Title	NOC Number	Interest Code	Production Date	Education Level	Outlook Level	Lifting Level
Receptionist	1414.1	SMd	OCT 2005	1	4	2
Sales Representative (Wholesale, Nontechnical)	6411	SMd	OCT 2003	4	3	3
Software Engineer	2173	IMD	JUL 2004	15	2	2
Systems Auditor	2171.4	MDI	JUL 2004	15	2	2
Systems Security Analyst	2171.2	MID	JUL 2004	13	2	2
Technical Sales Representative	6221	OSi	OCT 2003	1	2	2
Word Processing Operator	1411	OMi	OCT 2005	4	4	2

Oil and Gas Extraction Industry

Occupational Profile Title	NOC Number	Interest Code	Production Date	Education Level	Outlook Level	Lifting Level
Field Operations and Services						
Commercial Diver	7382	OIM	AUG 2005	12	3	4
Drilling and Service Rig Managers	8222	Dio	AUG 2005	4	2	4
Drilling Rig Leasehand/Floorhand	8412.1	OMd	JUL 2005	3	2	5
Exploration Geophysicist	2113	IOD	JUN 2004	15	3	4
Field Production Operator	9232	Old	AUG 2005	1	2	4
Geological and Geophysical Technologist	2212.1	Old	OCT 2004	13	3	4
Geologist	2113	IOD	JUN 2004	15	3	2
Land Agent	1225	MDs	APR 2005	1	3	2
Oil and Gas Well Loggers and Testers	8232.2	OMi	AUG 2005	1	2	4
Petroleum Engineer	2145	IOD	JUN 2004	15	2	3
Petroleum Engineering Technologist	2212.1	Old	OCT 2004	13	3	3
Rig Technician	8232.1	ODm	JUL 2005	9	2	4
Rig Technician	8412.1	OMd	JUL 2005	9	2	4
Seismic Observer	2212.2	OMi	SEP 2005	1	3	4
Seismic Worker	8615	MOi	SEP 2005	1	2	4
Service Rig Personnel	8412.1	OMd	JUL 2005	3	2	5
Surface Mining Equipment Operator	7421	OMi	AUG 2005	1	2	4
Well Service Equipment Operator	8412.2	OMi	JUL 2005	4	2	4
Wireline Field Supervisor	8222	Dio	SEP 2005	1	2	2
Processing and Other Related Activities						
Chemical Engineer	2134	IOD	JUN 2004	15	2	4
Chemical Engineering Technologist	2211.1	OIM	JUL 2004	13	3	2
Chemical Technologist	2211.1	OIM	JUN 2004	13	3	2
Chemist	2112	IOD	JUL 2004	15	3	2
Civil Engineer	2131	IOD	JUN 2004	15	2	1
Civil Engineering Technologist	2231.1	IMd	JUN 2004	13	2	3
Financial Analyst	1112.1	MId	NOV 2005	15	3	2
Gas Pipeline Operators and Maintenance Workers	9232	Old	AUG 2005	4	2	4
Gas Plant Operator	9232	Old	AUG 2005	1	2	4
Gas Utility Operator	7442.2	MOi	FEB 2006	10	4	4
Geomatics/Surveying Engineer	2131	IOD	JUL 2004	15	2	4
Geomatics/Surveying Technologist	2254.1	OIM	JUN 2004	13	3	4
Hazardous Waste Management Technologist	2263	MID	SEP 2005	13	3	4
Hydrologist	2113	IOD	SEP 2005	15	3	4
Hydrometric Technician/Technologist	2212.1	Old	SEP 2005	13	3	3
Industrial Engineer	2141	IOD	JUN 2004	15	3	2
Industrial Engineering Technologist	2233.1	IMd	OCT 2004	13	3	2
Instrument Technician	2243	OIM	FEB 2006	9	2	4
Land Surveyor	2154	IOD	JUL 2004	15	3	3
Manufacturing Engineer	2141	IOD	JUN 2004	15	3	2
Materials Engineering Technologist	2233.1	IMd	JUL 2004	13	3	4
Materials/Metallurgical Engineer	2142	IOD	JUL 2004	15	3	3
Mining Engineer	2143	IOD	JUL 2004	15	3	3
Occupational Health and Safety Inspector	2263	MID	MAR 2005	1	3	2
Oil Pipeline Operators and Maintenance Workers	9232	Old	AUG 2005	4	2	4
Power Engineer	7351	Oim	JUL 2005	1	3	4
Refinery/Upgrader Process Operator	9232	Old	AUG 2005	12	2	4
Safety Officer	2263	MID	MAR 2005	1	3	3
Indirectly Related Profiles						

Occupational Profile Title	NOC Number	Interest Code	Production Date	Education Level	Outlook Level	Lifting Level
Accountant	1111.2	MID	NOV 2005	15	3	2
Accounting Technician	1231	MDi	OCT 2005	4	3	2
Administrative Assistant	1411	OMi	OCT 2005	12	4	2
Arbitrator	1121	IMS	OCT 2005	1	3	2
Archaeologist	4169.2	IDM	NOV 2005	15	3	3
Assessor	1235.1	Mds	DEC 2005	13	4	2
Automated Systems Technologist	2232.1	OIM	JUL 2004	13	2	4
Biochemist	2112	IOD	SEP 2005	15	3	2
Biological Technician	2221.2	Moi	SEP 2005	13	3	3
Boilermaker	7262	OMI	FEB 2006	7	2	4
Bus Driver	7412.1	OMS	SEP 2003	1	3	4
Chef	6241.1	DMI	MAR 2003	1	3	3
Computer and Network Operator	2281.1	OMd	JUL 2004	1	2	3
Computer Engineer	2147.1	IOD	JUL 2004	15	3	3
Computer Programmer	2174.1	IMD	JUL 2004	1	2	2
Computer Service Technician	2242	OIM	SEP 2004	1	3	4
Cook	6242	MOd	FEB 2006	5	3	4
Crane and Hoisting Equipment Operator	7371	OMi	FEB 2006	6	2	5
Custodian	6663	MOI	JUN 2003	1	4	4
Customer Support Analyst	2282	MSo	JUL 2004	1	2	2
Dispatcher	1475.1	MDS	JUN 2003	1	3	2
Drafting Technician	2253.2	MIO	AUG 2005	12	3	2
Ecologist	2121.1	IOD	SEP 2005	17	3	2
Economist	4162	IMD	NOV 2005	17	3	2
Electrical Engineer	2133	IOD	AUG 2004	15	2	3
Electrical Engineering Technologist	2241.1	OIM	SEP 2004	13	2	4
Electrician	7241	Oim	FEB 2006	8	2	4
Electrician	7242	Oim	FEB 2006	8	2	4
Electronics Engineering Technologist	2241.1	OIM	SEP 2004	13	2	4
Engineering Design and Drafting Technologist	2253.1	MIO	AUG 2005	13	3	2
Environmental Auditor	2263	MID	SEP 2005	15	3	2
Environmental Engineer	2131	IOD	JUN 2004	15	2	2
Ergonomist	4161.1	IDM	JAN 2006	15	3	2
Firefighter	6262	OMD	MAY 2003	1	4	4
Gasfitter	7253	OMi	FEB 2006	5	3	5
Geographer	4169.3	IDM	AUG 2005	15	3	2
Heavy Equipment Operator	7421	OMi	DEC 2003	1	2	3
Heavy Equipment Technician	7312	OMI	FEB 2006	9	3	4
Heavy Equipment Technician	7321.3	OIM	FEB 2006	9	3	4
Helicopter Pilot	2271.1	OID	SEP 2003	1	3	4
Human Resources Professional	1223	SMd	OCT 2005	13	3	2
Industrial Designer	2252	IMO	JUL 2005	1	4	2
Information Systems Consultant	2171.1	IMD	JUL 2004	15	2	2
Insulator	7293	MOi	FEB 2006	5	2	4
Internal Auditor	1111.1	Mid	NOV 2005	15	3	2
Landscape Gardener	2225.5	OMD	FEB 2006	5	3	5
Lawyer	4112	MID	NOV 2005	17	3	2
Librarian	5111	MSd	DEC 2005	17	4	2
Library Technician	5211.1	SMi	DEC 2005	13	4	3
Machinist	7231.1	OIM	FEB 2006	7	2	4
Management Consultant	1122.1	IDS	NOV 2005	17	2	2
Market Research Analyst	4163	DIS	OCT 2005	1	2	2
Marketing Manager	0611.2	DSI	OCT 2005	13	3	2
Mechanical Engineer	2132	IOD	SEP 2004	15	2	2
Mechanical Engineering Technologist	2232.1	OIM	JUL 2004	13	2	3
Mediator	1121	IMS	OCT 2005	1	3	2
Meteorologist	2114	IOD	OCT 2005	15	3	2

Occupational Profile Title	NOC Number	Interest Code	Production Date	Education Level	Outlook Level	Lifting Level
Microbiologist	2121.2	IOD	SEP 2005	15	3	2
Millwright	7311	OIM	FEB 2006	7	3	4
Occupational Hygienist	4161.2	IDM	MAR 2005	15	3	2
Oceanographer	2113	IOD	OCT 2005	17	3	2
Operations Manager	0911	DIM	JAN 2006	1	3	2
Operations Research Analyst	2161.2	IMD	JAN 2006	15	3	2
Paralegal	4211.1	MSI	OCT 2005	13	3	2
Parts Technician	1472	MOS	FEB 2006	6	3	3
Physicist	2111.1	IOD	DEC 2005	15	3	2
Plumber	7251	Oim	FEB 2006	8	2	5
Pollution Control Technologist	2211.1	OIM	SEP 2005	13	3	4
Power System Electrician	7243	Oim	FEB 2006	9	2	3
Private Trainer/Facilitator	1121	IMS	NOV 2005	1	3	2
Public Relations Representative	5124	IMS	DEC 2005	13	3	2
Purchasing Agent	1225	MDs	MAY 2003	1	3	2
Receptionist	1414.1	SMd	OCT 2005	1	4	2
Sales Representative (Wholesale, Nontechnical)	6411	SMd	OCT 2003	4	3	3
Security Guard	6651	Msd	APR 2003	1	3	3
Shipper and Receiver	1471	MOd	OCT 2005	1	3	4
Software Engineer	2173	IMD	JUL 2004	15	2	2
Soil Scientist	2115.2	IOD	SEP 2005	15	3	2
Sprinkler Systems Installer	7252.2	Oim	FEB 2006	6	2	4
Statistician	2161.2	IMD	DEC 2005	15	3	2
Steamfitter-Pipefitter	7252.1	Oim	FEB 2006	6	2	5
Structural Steel and Plate Fitter	7263	OMI	FEB 2006	5	2	4
Technical Sales Representative	6221	OSi	OCT 2003	1	2	2
Technical Writer	5121.2	IMo	JUN 2005	1	3	2
Tool and Die Maker	7232.1	OIM	FEB 2006	7	3	4
Traffic Manager	0713.1	DMs	OCT 2003	1	2	2
Truck Driver	7411.1	MOd	OCT 2003	1	3	3
Warehousing Professionals	7452.2	OMi	FEB 2006	10	3	4
Water Well Driller	7373	OMi	FEB 2006	5	2	5
Web Designer	2175	IMD	JUL 2004	13	2	2
Webmaster	2175	IMD	JUL 2004	13	2	2
Welder	7265.1	OMI	FEB 2006	5	2	1
Word Processing Operator	1411	OMi	OCT 2005	4	4	2

Occupational Profile Title	NOC Number	Interest Code	Production Date	Education Level	Outlook Level	Lifting Level
Other Manufacturing Industry						
Wood and Paper Products						
Binding and Finishing Machine Operators	9473.1	OMi	DEC 2005	1	4	4
Binding and Finishing Machine Operators	9473.2	OMi	DEC 2005	1	4	4
Cabinetmaker	7272	OMI	FEB 2006	7	3	4
Digital Printing Machine Operator	9471	MOI	DEC 2005	1	4	4
Pre-Press Technician	9472.5	OMI	DEC 2005	4	3	2
Printing Press Operator	7381	MOd	DEC 2005	4	4	4
Pulpmill Operator	9432	OMi	OCT 2005	4	4	3
Sawfiler	7383.5	OMi	FEB 2006	6	4	5
Sawmill Machine Operator	9431	OMi	DEC 2005	1	4	4
Upholsterer	7341	OMI	DEC 2003	3	4	4
Electrical and Electronic Products						
Computer Engineer	2147.1	IOD	JUL 2004	15	3	3
Electrical Engineer	2133	IOD	AUG 2004	15	2	3
Electrical Engineering Technologist	2241.1	OIM	SEP 2004	13	2	4
Electronics Assemblers and Fabricators	9483.1	OMi	SEP 2003	1	2	2
Electronics Engineering Technologist	2241.1	OIM	SEP 2004	13	2	4
Miscellaneous Products						
Aircraft Maintenance Engineer	7315.1	OIM	SEP 2003	13	2	4
Avionics Technologist	2244.3	OMi	JUN 2004	13	2	4
Denturist	3221	MOI	NOV 2004	13	3	2
Jeweller	7344.1	OIM	APR 2003	1	4	2
Musical Instrument Repair Technician	7445	OMi	MAY 2003	4	3	3
Optical Technician	3414.3	OMi	FEB 2005	1	3	2
Prosthetic/Orthotic Technician	3219.4	OIM	MAR 2005	13	2	4
Prosthetist and Orthotist	3219.3	OID	MAR 2005	13	2	4
Watch Repairer	7344.2	OIM	APR 2003	1	4	2
Other Profiles Related to Manufacturing						
Automated Systems Technologist	2232.1	OIM	JUL 2004	13	2	4
Chemical Technologist	2211.1	OIM	JUN 2004	13	3	2
Customs Broker	1236.1	MSd	JUN 2003	4	3	2
Drafting Technician	2253.2	MIO	AUG 2005	12	3	2
Engineering Design and Drafting Technologist	2253.1	MIO	AUG 2005	13	3	2
Hazardous Waste Management Technologist	2263	MID	SEP 2005	13	3	4
Industrial Designer	2252	IMO	JUL 2005	1	4	2
Industrial Engineer	2141	IOD	JUN 2004	15	3	2
Industrial Engineering Technologist	2233.1	IMd	OCT 2004	13	3	2
Instrument Technician	2243	OIM	FEB 2006	9	2	4
Manufacturing Engineer	2141	IOD	JUN 2004	15	3	2
Materials Engineering Technologist	2233.1	IMd	JUL 2004	13	3	4
Materials/Metallurgical Engineer	2142	IOD	JUL 2004	15	3	3
Mechanical Engineer	2132	IOD	SEP 2004	15	2	2
Mechanical Engineering Technologist	2232.1	OIM	JUL 2004	13	2	3
Millwright	7311	OIM	FEB 2006	7	3	4
Operations Manager	0911	DIM	JAN 2006	1	3	2
Operations Research Analyst	2161.2	IMD	JAN 2006	15	3	2
Pollution Control Technologist	2211.1	OIM	SEP 2005	13	3	4
Power Engineer	7351	Oim	JUL 2005	1	3	4
Safety Officer	2263	MID	MAR 2005	1	3	3
Sales Representative (Wholesale, Nontechnical)	6411	SMd	OCT 2003	4	3	3

Occupational Profile Title	NOC Number	Interest Code	Production Date	Education Level	Outlook Level	Lifting Level
Technical Sales Representative	6221	OSi	OCT 2003	1	2	2
Technical Writer	5121.2	IMo	JUN 2005	1	3	2
Traffic Manager	0713.1	DMs	OCT 2003	1	2	2
Warehousing Professionals	7452.2	OMi	FEB 2006	10	3	4
Indirectly Related Occupations						
Accountant	1111.2	MID	NOV 2005	15	3	2
Accounting Technician	1231	MDi	OCT 2005	4	3	2
Administrative Assistant	1411	OMi	OCT 2005	12	4	2
Building Operator	6663	MOI	FEB 2005	3	4	5
Building Operator	7351	Oim	FEB 2005	3	4	5
Bus Driver	7412.1	OMS	SEP 2003	1	3	4
Collection Agent	1435	MIs	NOV 2005	4	3	2
Computer and Network Operator	2281.1	OMd	JUL 2004	1	2	3
Computer Programmer	2174.1	IMD	JUL 2004	1	2	2
Cook	6242	MOd	FEB 2006	5	3	4
Crane and Hoisting Equipment Operator	7371	OMi	FEB 2006	6	2	5
Custodian	6663	MOI	JUN 2003	1	4	4
Customer Support Analyst	2282	MSo	JUL 2004	1	2	2
Ecologist	2121.1	IOD	SEP 2005	17	3	2
Economist	4162	IMD	NOV 2005	17	3	2
Electrician	7241	Oim	FEB 2006	8	2	4
Electrician	7242	Oim	FEB 2006	8	2	4
Food Service Helper	6641.3	OMs	MAR 2003	1	3	4
Food Service Supervisor	6212	MDs	MAR 2003	4	3	3
Graphic Designer	5241.1	IMS	MAY 2005	13	3	2
Heavy Equipment Operator	7421	OMi	DEC 2003	1	2	3
Heavy Equipment Technician	7312	OMI	FEB 2006	9	3	4
Heavy Equipment Technician	7321.3	OIM	FEB 2006	9	3	4
Home Economist	4164.2	IDS	MAR 2005	15	4	3
Human Resources Professional	1223	SMd	OCT 2005	13	3	2
Illustrator	5241.2	IMS	JUN 2005	1	3	2
Information Systems Consultant	2171.1	IMD	JUL 2004	15	2	2
Information Systems Quality Assurance Analyst	2171.3	IMD	JUL 2004	13	2	2
Internal Auditor	1111.1	Mid	NOV 2005	15	3	2
Lawyer	4112	MID	NOV 2005	17	3	2
Legal Secretary	1242	MOd	OCT 2005	12	3	2
Management Consultant	1122.1	IDS	NOV 2005	17	2	2
Marketing Manager	0611.2	DSI	OCT 2005	13	3	2
Occupational Hygienist	4161.2	IDM	MAR 2005	15	3	2
Paralegal	4211.1	MSI	OCT 2005	13	3	2
Parts Technician	1472	MOS	FEB 2006	6	3	3
Public Relations Representative	5124	IMS	DEC 2005	13	3	2
Purchasing Agent	1225	MDs	MAY 2003	1	3	2
Receptionist	1414.1	SMd	OCT 2005	1	4	2
Security Guard	6651	Msd	APR 2003	1	3	3
Shipper and Receiver	1471	MOd	OCT 2005	1	3	4
Software Engineer	2173	IMD	JUL 2004	15	2	2
Steamfitter-Pipefitter	7252.1	Oim	FEB 2006	6	2	5
Systems Auditor	2171.4	MDI	JUL 2004	15	2	2
Systems Security Analyst	2171.2	MID	JUL 2004	13	2	2
Systems Tester	2283	MOi	JUL 2004	1	2	2
Translator	5125.1	MId	MAR 2005	15	2	2
Truck Driver	7411.1	MOd	OCT 2003	1	3	3
Web Designer	2175	IMD	JUL 2004	13	2	2
Web Technician	2281.2	Omi	JUL 2004	13	2	3
Webmaster	2175	IMD	JUL 2004	13	2	2
Word Processing Operator	1411	OMi	OCT 2005	4	4	2

Occupational Profile Title	NOC Number	Interest Code	Production Date	Education Level	Outlook Level	Lifting Level
Petrochemicals, Rubber, Plastics and Chemicals Manufacturing Industry						
Manufacturing						
Biochemist	2112	IOD	SEP 2005	15	3	2
Chemical Engineer	2134	IOD	JUN 2004	15	2	4
Chemical Engineering Technologist	2211.1	OIM	JUL 2004	13	3	2
Chemical Technologist	2211.1	OIM	JUN 2004	13	3	2
Chemist	2112	IOD	JUL 2004	15	3	2
Customs Broker	1236.1	MSd	JUN 2003	4	3	2
Gas Plant Operator	9232	Old	AUG 2005	1	2	4
Industrial Engineer	2141	IOD	JUN 2004	15	3	2
Industrial Engineering Technologist	2233.1	IMd	OCT 2004	13	3	2
Instrument Technician	2243	OIM	FEB 2006	9	2	4
Manufacturing Engineer	2141	IOD	JUN 2004	15	3	2
Materials Engineering Technologist	2233.1	IMd	JUL 2004	13	3	4
Materials/Metallurgical Engineer	2142	IOD	JUL 2004	15	3	3
Plastics Processing Technician	2233.2	OMi	FEB 2004	1	3	4
Pollution Control Technologist	2211.1	OIM	SEP 2005	13	3	4
Power Engineer	7351	Oim	JUL 2005	1	3	4
Refinery/Upgrader Process Operator	9232	Old	AUG 2005	12	2	4
Safety Officer	2263	MID	MAR 2005	1	3	3
Profiles of Related Occupations						
Biologist	2121.1	IOD	JAN 2005	15	3	2
College, Technical or Vocational Instructor	4131	IDS	NOV 2005	13	3	2
Drilling Rig Leasehand/Floorhand	8412.1	OMd	JUL 2005	3	2	5
Field Production Operator	9232	Old	AUG 2005	1	2	4
Gas Pipeline Operators and Maintenance Workers	9232	Old	AUG 2005	4	2	4
Gas Utility Operator	7442.2	MOi	FEB 2006	10	4	4
Hazardous Waste Management Technologist	2263	MID	SEP 2005	13	3	4
Hydrologist	2113	IOD	SEP 2005	15	3	4
Hydrometric Technician/Technologist	2212.1	Old	SEP 2005	13	3	3
Millwright	7311	OIM	FEB 2006	7	3	4
Oil Pipeline Operators and Maintenance Workers	9232	Old	AUG 2005	4	2	4
Petroleum Engineer	2145	IOD	JUN 2004	15	2	3
Petroleum Engineering Technologist	2212.1	Old	OCT 2004	13	3	3
Power System Electrician	7243	Oim	FEB 2006	9	2	3
University Professor	4121	IDS	NOV 2005	19	3	2
Indirectly Related Profiles						
Accountant	1111.2	MID	NOV 2005	15	3	2
Accounting Technician	1231	MDi	OCT 2005	4	3	2
Administrative Assistant	1411	OMi	OCT 2005	12	4	2
Arbitrator	1121	IMS	OCT 2005	1	3	2
Automated Systems Technologist	2232.1	OIM	JUL 2004	13	2	4
Computer Engineer	2147.1	IOD	JUL 2004	15	3	3
Computer Programmer	2174.1	IMD	JUL 2004	1	2	2
Computer Service Technician	2242	OIM	SEP 2004	1	3	4
Cook	6242	MOd	FEB 2006	5	3	4
Custodian	6663	MOI	JUN 2003	1	4	4
Customer Support Analyst	2282	MSo	JUL 2004	1	2	2
Customs Broker	1236.1	MSd	JUN 2003	4	3	2
Demographer	2161.2	IMD	DEC 2005	17	3	2
Dispatcher	1475.1	MDS	JUN 2003	1	3	2
Ecologist	2121.1	IOD	SEP 2005	17	3	2

Occupational Profile Title	NOC Number	Interest Code	Production Date	Education Level	Outlook Level	Lifting Level
Economist	4162	IMD	NOV 2005	17	3	2
Financial Analyst	1112.1	MId	NOV 2005	15	3	2
Heavy Equipment Operator	7421	OMi	DEC 2003	1	2	3
Heavy Equipment Technician	7312	OMI	FEB 2006	9	3	4
Heavy Equipment Technician	7321.3	OIM	FEB 2006	9	3	4
Human Resources Professional	1223	SMd	OCT 2005	13	3	2
Information Systems Consultant	2171.1	IMD	JUL 2004	15	2	2
Internal Auditor	1111.1	Mid	NOV 2005	15	3	2
Lawyer	4112	MID	NOV 2005	17	3	2
Librarian	5111	MSd	DEC 2005	17	4	2
Library Technician	5211.1	SMi	DEC 2005	13	4	3
Management Consultant	1122.1	IDS	NOV 2005	17	2	2
Marketing Manager	0611.2	DSI	OCT 2005	13	3	2
Mediator	1121	IMS	OCT 2005	1	3	2
Occupational Health Nurse	3152.2	SMD	SEP 2004	14	2	3
Occupational Hygienist	4161.2	IDM	MAR 2005	15	3	2
Operations Manager	0911	DIM	JAN 2006	1	3	2
Power Engineer	7351	Oim	JUL 2005	1	3	4
Private Trainer/Facilitator	1121	IMS	NOV 2005	1	3	2
Public Relations Representative	5124	IMS	DEC 2005	13	3	2
Purchasing Agent	1225	MDs	MAY 2003	1	3	2
Receptionist	1414.1	SMd	OCT 2005	1	4	2
Safety Officer	2263	MID	MAR 2005	1	3	3
Sales Representative (Wholesale, Nontechnical)	6411	SMd	OCT 2003	4	3	3
Security Guard	6651	Msd	APR 2003	1	3	3
Shipper and Receiver	1471	MOd	OCT 2005	1	3	4
Software Engineer	2173	IMD	JUL 2004	15	2	2
Technical Sales Representative	6221	OSi	OCT 2003	1	2	2
Truck Driver	7411.1	MOd	OCT 2003	1	3	3
Warehousing Professionals	7452.2	OMi	FEB 2006	10	3	4
Web Designer	2175	IMD	JUL 2004	13	2	2
Webmaster	2175	IMD	JUL 2004	13	2	2
Word Processing Operator	1411	OMi	OCT 2005	4	4	2

Occupational Profile Title	NOC Number	Interest Code	Production Date	Education Level	Outlook Level	Lifting Level
Professional and Technical Services Industry						
Accounting Services						
Accountant	1111.2	MID	NOV 2005	15	3	2
Accounting Technician	1231	MDi	OCT 2005	4	3	2
Internal Auditor	1111.1	Mid	NOV 2005	15	3	2
Architectural, Engineering and Surveying Services						
Agricultural Engineer	2148.1	IOD	JUN 2004	15	3	4
Architect	2151	ISD	MAR 2005	17	3	2
Architectural Technologist	2251	IMO	MAR 2005	13	3	2
Automated Systems Technologist	2232.1	OIM	JUL 2004	13	2	4
Civil Engineer	2131	IOD	JUN 2004	15	2	1
Civil Engineering Technologist	2231.1	IMd	JUN 2004	13	2	3
Computer Engineer	2147.1	IOD	JUL 2004	15	3	3
Drafting Technician	2253.2	MIO	AUG 2005	12	3	2
Electrical Contractor	7212	Dio	FEB 2004	1	3	2
Electrical Engineer	2133	IOD	AUG 2004	15	2	3
Electrical Engineering Technologist	2241.1	OIM	SEP 2004	13	2	4
Electronic Technician	2242	OIM	FEB 2006	8	3	4
Electronics Engineering Technologist	2241.1	OIM	SEP 2004	13	2	4
Engineering Design and Drafting Technologist	2253.1	MIO	AUG 2005	13	3	2
Environmental Engineer	2131	IOD	JUN 2004	15	2	2
Geomatics/Surveying Engineer	2131	IOD	JUL 2004	15	2	4
Geomatics/Surveying Technologist	2254.1	OIM	JUN 2004	13	3	4
Industrial Designer	2252	IMO	JUL 2005	1	4	2
Industrial Engineer	2141	IOD	JUN 2004	15	3	2
Instrumentation Engineering Technologist	2232.1	OIM	NOV 2003	13	2	2
Instrumentation Engineering Technologist	2241.1	OIM	NOV 2003	13	2	2
Interior Designer	5242	IMS	MAR 2005	15	3	2
Land Surveyor	2154	IOD	JUL 2004	15	3	3
Landscape Architect	2152	ISD	MAR 2005	15	3	2
Manufacturing Engineer	2141	IOD	JUN 2004	15	3	2
Materials/Metallurgical Engineer	2142	IOD	JUL 2004	15	3	3
Mechanical Engineer	2132	IOD	SEP 2004	15	2	2
Software Engineer	2173	IMD	JUL 2004	15	2	2
Artistic Services						
Animator	5241.1	IMS	MAY 2005	1	3	2
Cartoonist	5241.1	IMS	MAY 2005	1	3	2
Composer	5132.2	IMd	MAY 2003	1	3	2
Costume Designer	5243.1	IMD	FEB 2004	1	3	2
Film Director	5131.2	IDS	OCT 2003	15	3	2
Graphic Designer	5241.1	IMS	MAY 2005	13	3	2
Illustrator	5241.2	IMS	JUN 2005	1	3	2
Lighting Designer	5243.1	IMD	FEB 2004	1	3	2
Music Copyist	5132.3	DIm	MAY 2003	1	3	2
Orchestra/Band Conductor	5132.1	DIM	MAY 2003	15	3	2
Orchestrator/Arranger	5132.3	DIm	MAY 2003	1	3	2
Producer - Film, Radio, Television and Theatre	5131.1	IDS	MAY 2003	1	3	2
Set Designer	5243.1	IMD	FEB 2004	1	3	2
Songwriter	5132.2	IMd	MAY 2003	1	3	2
Theatre Director	5131.2	IDS	SEP 2003	15	3	2
Legal and Protective Services						
Lawyer	4112	MID	NOV 2005	17	3	2

Occupational Profile Title	NOC Number	Interest Code	Production Date	Education Level	Outlook Level	Lifting Level
Legal and Realtime Reporter	1244.1	MOi	OCT 2005	13	3	2
Legal Secretary	1242	MOd	OCT 2005	12	3	2
Paralegal	4211.1	MSI	OCT 2005	13	3	2
Private Investigator	6465.2	MIS	APR 2003	1	3	3
Security Alarm Installer	2242	OIM	DEC 2003	4	3	3
Security Guard	6651	Msd	APR 2003	1	3	3
Management and Technical Services						
Administrative Assistant	1411	OMi	OCT 2005	12	4	2
Computer and Network Operator	2281.1	OMd	JUL 2004	1	2	3
Computer Programmer	2174.1	IMD	JUL 2004	1	2	2
Computer Service Technician	2242	OIM	SEP 2004	1	3	4
Customer Support Analyst	2282	MSo	JUL 2004	1	2	2
Customs Broker	1236.1	MSd	JUN 2003	4	3	2
Demographer	2161.2	IMD	DEC 2005	17	3	2
Ergonomist	4161.1	IDM	JAN 2006	15	3	2
Information Systems Consultant	2171.1	IMD	JUL 2004	15	2	2
Investment Underwriter	1114.4	MID	JAN 2003	17	3	2
Management Consultant	1122.1	IDS	NOV 2005	17	2	2
Market Research Analyst	4163	DIS	OCT 2005	1	2	2
Mathematician	2161.1	IMD	NOV 2005	15	3	2
Operations Research Analyst	2161.2	IMD	JAN 2006	15	3	2
Statistician	2161.2	IMD	DEC 2005	15	3	2
Web Designer	2175	IMD	JUL 2004	13	2	2
Word Processing Operator	1411	OMi	OCT 2005	4	4	2
Other Professional and Technical Services						
Advertising Account Executive	1122.2	ISD	FEB 2004	1	2	2
Collection Agent	1435	MIs	NOV 2005	4	3	2
Financial Planner	1114.1	MID	OCT 2005	1	3	2
Fundraiser	5124	IMS	FEB 2005	1	3	2
Human Resources Professional	1223	SMd	OCT 2005	13	3	2
Interpreter	5125.3	MIs	MAR 2005	15	2	2
Occupational Hygienist	4161.2	IDM	MAR 2005	15	3	2
Personal Property/Equipment Appraiser	1235.3	Mds	DEC 2003	1	4	2
Public Relations Representative	5124	IMS	DEC 2005	13	3	2
Sign Language Interpreter	5125.3	MIs	MAR 2005	13	2	2
Translator	5125.1	MId	MAR 2005	15	2	2
Related Profiles						
Advertising Copywriter	5121.3	IMd	MAY 2005	1	3	2
Airline Pilot	2271.1	OID	OCT 2003	4	3	3
Arbitrator	1121	IMS	OCT 2005	1	3	2
Assessor	1235.1	Mds	DEC 2005	13	4	2
Auctioneer	6411	SMd	OCT 2003	1	3	3
Biologist	2121.1	IOD	JAN 2005	15	3	2
Biotechnologist	2121.2	IOD	SEP 2005	15	3	2
Career Development Professional	4213	SMI	NOV 2005	1	3	2
Chef	6241.1	DMI	MAR 2003	1	3	3
Chemical Engineer	2134	IOD	JUN 2004	15	2	4
Chemical Engineering Technologist	2211.1	OIM	JUL 2004	13	3	2
College, Technical or Vocational Instructor	4131	IDS	NOV 2005	13	3	2
Combined Laboratory and X-Ray Technologist	3211.1	MIO	FEB 2005	13	2	4
Combined Laboratory and X-Ray Technologist	3215.1	OMi	FEB 2005	13	2	4
Creative Writer	5121.1	IMd	MAY 2005	1	3	2
Dietitian	3132	DIS	MAR 2003	16	2	2

Occupational Profile Title	NOC Number	Interest Code	Production Date	Education Level	Outlook Level	Lifting Level
Direct Distributor	6623.1	MSd	OCT 2003	1	4	2
Drilling and Service Rig Managers	8222	Dio	AUG 2005	4	2	4
Ecologist	2121.1	IOD	SEP 2005	17	3	2
English as a Second Language Teacher - Adults	4131	IDS	NOV 2005	1	3	2
Entomologist	2121.1	IOD	SEP 2005	15	3	2
Environmental Education Specialist	4131	IDS	OCT 2005	15	3	2
Exhibit Designer	5243.3	IMD	OCT 2003	1	3	3
Exploration Geophysicist	2113	IOD	JUN 2004	15	3	4
Fashion Designer	5243.2	IMD	APR 2005	12	3	2
Financial Analyst	1112.1	MId	NOV 2005	15	3	2
Food Science Technologist	2211.1	OIM	MAR 2005	13	3	2
Food Scientist	2121.1	IOD	MAR 2005	15	3	2
Forester	2122	ISD	JAN 2006	15	3	2
Geneticist	2121.2	IOD	NOV 2005	17	3	2
Geological and Geophysical Technologist	2212.1	OId	OCT 2004	13	3	4
Geologist	2113	IOD	JUN 2004	15	3	2
Helicopter Pilot	2271.1	OID	SEP 2003	1	3	4
Hydrologist	2113	IOD	SEP 2005	15	3	4
Hydrometric Technician/Technologist	2212.1	OId	SEP 2005	13	3	3
Insurance Adjuster	1233.1	MSd	NOV 2005	4	3	2
Insurance Agent/Broker	6231	MSd	NOV 2005	1	3	2
Interpretive Naturalist	2121.1	IOD	NOV 2003	13	3	2
Investment Advisor	1113.1	ISM	NOV 2005	13	3	2
Mechanical Engineering Technologist	2232.1	OIM	JUL 2004	13	2	3
Mediator	1121	IMS	OCT 2005	1	3	2
Medical Transcriptionist	1244.2	MOi	NOV 2005	12	3	2
Messenger/Courier	1463	Mos	SEP 2002	1	3	4
Meteorologist	2114	IOD	OCT 2005	15	3	2
Microbiologist	2121.2	IOD	SEP 2005	15	3	2
Mining Engineer	2143	IOD	JUL 2004	15	3	3
Model	5232.4	SMi	APR 2005	1	3	2
Oceanographer	2113	IOD	OCT 2005	17	3	2
Oil and Gas Well Loggers and Testers	8232.2	OMi	AUG 2005	1	2	4
Painter and Decorator	7294	MOi	FEB 2006	5	3	4
Petroleum Engineer	2145	IOD	JUN 2004	15	2	3
Petroleum Engineering Technologist	2212.1	OId	OCT 2004	13	3	3
Pharmacologist	2121.2	IOD	FEB 2005	15	3	2
Physiologist	2121.1	IOD	APR 2005	19	3	2
Pollution Control Technologist	2211.1	OIM	SEP 2005	13	3	4
Pre-Press Technician	9472.5	OMI	DEC 2005	4	3	2
Private Trainer/Facilitator	1121	IMS	NOV 2005	1	3	2
Property Manager	1224	MDs	JAN 2006	4	3	2
Psychologist	4151	SIM	JUL 2005	17	3	2
Radiological Technologist	3215.1	OMi	JAN 2005	13	2	3
Real Estate Appraiser	1235.3	Mds	JAN 2006	1	4	2
Safety Officer	2263	MID	MAR 2005	1	3	3
Sales Representative (Wholesale, Nontechnical)	6411	SMd	OCT 2003	4	3	3
Seismic Observer	2212.2	OMi	SEP 2005	1	3	4
Technical Sales Representative	6221	OSi	OCT 2003	1	2	2
Technical Writer	5121.2	IMo	JUN 2005	1	3	2
Telemarketer	6623.4	Msd	NOV 2005	1	4	2
Toxicologist	2121.2	IOD	FEB 2005	15	3	2
Urban, Regional and Park Planners	2153	ISD	JUN 2003	15	2	2
Visual Merchandiser	5243.3	IMD	MAY 2003	1	3	2
Webmaster	2175	IMD	JUL 2004	13	2	2
Wireline Field Supervisor	8222	Dio	SEP 2005	1	2	2

Public Administration Industry

Occupational Profile Title	NOC Number	Interest Code	Production Date	Education Level	Outlook Level	Lifting Level
Government Employees/Agents						
Addictions Counsellor	4153	SId	DEC 2005	13	3	2
Agricultural Commodity Inspector	2222.2	Mid	FEB 2005	1	3	3
Air Traffic Controller	2272.1	OMD	OCT 2005	4	3	2
Archivist	5113	MIS	DEC 2005	17	4	2
Assessor	1235.1	Mds	DEC 2005	13	4	2
Audiologist	3141.1	OIS	DEC 2004	17	2	2
Bylaw Enforcement Officer	6463.2	MDs	APR 2003	1	3	4
Canadian Forces Personnel - Commissioned Officer	0643	DMs	JAN 2005	1	1	1
Canadian Forces Personnel - Non Commissioned	6464	MOs	JAN 2005	2	1	4
Conservation Officer	2224	DMS	JAN 2006	15	4	3
Correctional Officer	6462	MDs	APR 2003	4	4	4
Correctional Services Worker	4155.2	SMI	APR 2003	13	3	3
Curator	5112.2	DMI	SEP 2003	15	4	4
Customs Inspector	1228.3	MDO	MAY 2003	4	3	2
Firefighter	6262	OMD	MAY 2003	1	4	4
Foreign Service Officer	4168	DIS	MAY 2003	17	4	2
Immigration Officer	1228.1	MDS	MAY 2003	4	3	2
Judge	4111	DMI	JUL 2003	18	1	2
Judicial Clerk	4211.1	MSI	OCT 2005	4	3	2
Land Titles Examiner	4211.1	MSI	MAY 2003	4	3	2
Municipal Administrator	0414	DIM	JUN 2003	13	4	2
Municipal Recycling Truck Driver	7411.2	MOd	JUN 2003	1	3	4
Municipal Recycling Waste Handler	9619	MOi	JUN 2003	1	4	4
Museum Technician	5212.6	OMi	OCT 2003	13	4	4
Occupational Health and Safety Inspector	2263	MID	MAR 2005	1	3	2
Park Warden	2224	DMS	JAN 2006	15	4	4
Parole/Probation Officer	4155.1	SMD	APR 2003	13	3	2
Police Officer	6261	MDS	APR 2003	1	3	4
Public Health Inspector	2263	MID	DEC 2003	15	3	3
Refuse Collector	7621	Moi	JUN 2003	1	4	4
Refuse Truck Driver	7422	OMi	JUN 2003	1	4	4
Safety Codes Officer	2264	MId	MAY 2003	1	3	2
Speech-Language Pathologist	3141.2	MIS	DEC 2004	17	2	2
Urban, Regional and Park Planners	2153	ISD	JUN 2003	15	2	2
Wildland Firefighter	8422	OMi	FEB 2004	1	4	5
Related Profiles						
Aboriginal Liaison	1221	MDS	MAR 2005	1	3	2
Arbitrator	1121	IMS	OCT 2005	1	3	2
Assessor	1235.1	Mds	DEC 2005	13	4	2
Biologist	2121.1	IOD	JAN 2005	15	3	2
Career Development Professional	4213	SMI	NOV 2005	1	3	2
Child and Youth Care Worker	4212	SMi	NOV 2005	12	3	4
Collection Agent	1435	MIs	NOV 2005	4	3	2
Community Health Nurse	3152.3	DMD	SEP 2004	14	2	2
Conservator	5112.1	Dim	MAY 2003	15	4	4
Economist	4162	IMD	NOV 2005	17	3	2
Entomologist	2121.1	IOD	SEP 2005	15	3	2
Environmental Auditor	2263	MID	SEP 2005	15	3	2
Food Scientist	2121.1	IOD	MAR 2005	15	3	2
Forester	2122	ISD	JAN 2006	15	3	2
Geographer	4169.3	IDM	AUG 2005	15	3	2
Gerontological Specialist	4169.9	IDM	NOV 2004	1	3	2

Occupational Profile Title	NOC Number	Interest Code	Production Date	Education Level	Outlook Level	Lifting Level
Hazardous Waste Management Technologist	2263	MID	SEP 2005	13	3	4
Health Service Administrator	0311	DMI	FEB 2005	1	3	2
Historian	4169.4	IDM	NOV 2005	17	3	2
Home Economist	4164.2	IDS	MAR 2005	15	4	3
Interpretive Naturalist	2121.1	IOD	NOV 2003	13	3	2
Kinesiologist	4167.1	SDI	MAR 2005	15	3	4
Legal and Realtime Reporter	1244.1	MOi	OCT 2005	13	3	2
Librarian	5111	MSd	DEC 2005	17	4	2
Library Clerk	1451	MSo	DEC 2005	4	3	3
Library Technician	5211.1	SMi	DEC 2005	13	4	3
Mechanical Engineer	2132	IOD	SEP 2004	15	2	2
Meteorologist	2114	IOD	OCT 2005	15	3	2
Paralegal	4211.1	MSI	OCT 2005	13	3	2
Real Estate Appraiser	1235.3	Mds	JAN 2006	1	4	2
Recreation and Sport Administrator	0513	DMI	MAR 2005	15	3	2
Recreation Co-ordinator/Supervisor	4167.5	SDI	MAR 2005	13	3	4
Social Worker	4152	SID	DEC 2005	13	3	2
Soil Scientist	2115.2	IOD	SEP 2005	15	3	2
Volunteer Manager	4212	SMi	FEB 2005	1	3	2
Water and Wastewater Treatment Plant Operator	9424.1	OIM	FEB 2003	4	4	4
Water and Wastewater Treatment Plant Operator	9424.2	OIM	FEB 2003	4	4	4
Indirectly Related Profiles						
Accountant	1111.2	MID	NOV 2005	15	3	2
Accounting Technician	1231	MDi	OCT 2005	4	3	2
Administrative Assistant	1411	OMi	OCT 2005	12	4	2
Biological Technician	2221.2	Moi	SEP 2005	13	3	3
Building Operator	6663	MOI	FEB 2005	3	4	5
Building Operator	7351	Oim	FEB 2005	3	4	5
Call Centre Agent	1453.2	MSi	NOV 2005	1	3	2
Cashier	6611	MOs	OCT 2003	1	4	3
Civil Engineer	2131	IOD	JUN 2004	15	2	1
Computer Programmer	2174.1	IMD	JUL 2004	1	2	2
Computer Service Technician	2242	OIM	SEP 2004	1	3	4
Demographer	2161.2	IMD	DEC 2005	17	3	2
Ecologist	2121.1	IOD	SEP 2005	17	3	2
Economist	4162	IMD	NOV 2005	17	3	2
Environmental Engineer	2131	IOD	JUN 2004	15	2	2
Ergonomist	4161.1	IDM	JAN 2006	15	3	2
Forester	2122	ISD	JAN 2006	15	3	2
Geomatics/Surveying Engineer	2131	IOD	JUL 2004	15	2	4
Heavy Equipment Operator	7421	OMi	DEC 2003	1	2	3
Human Resources Professional	1223	SMd	OCT 2005	13	3	2
Information Systems Consultant	2171.1	IMD	JUL 2004	15	2	2
Internal Auditor	1111.1	Mid	NOV 2005	15	3	2
Landscape Architect	2152	ISD	MAR 2005	15	3	2
Lawyer	4112	MID	NOV 2005	17	3	2
Legal Secretary	1242	MOd	OCT 2005	12	3	2
Mathematician	2161.1	IMD	NOV 2005	15	3	2
Mediator	1121	IMS	OCT 2005	1	3	2
Occupational Health Nurse	3152.2	SMD	SEP 2004	14	2	3
Occupational Hygienist	4161.2	IDM	MAR 2005	15	3	2
Paralegal	4211.1	MSI	OCT 2005	13	3	2
Power Engineer	7351	Oim	JUL 2005	1	3	4
Property Manager	1224	MDs	JAN 2006	4	3	2
Public Relations Representative	5124	IMS	DEC 2005	13	3	2

Occupational Profile Title	NOC Number	Interest Code	Production Date	Education Level	Outlook Level	Lifting Level
Purchasing Agent	1225	MDs	MAY 2003	1	3	2
Receptionist	1414.1	SMd	OCT 2005	1	4	2
Safety Officer	2263	MID	MAR 2005	1	3	3
Security Guard	6651	Msd	APR 2003	1	3	3
Shipper and Receiver	1471	MOd	OCT 2005	1	3	4
Software Engineer	2173	IMD	JUL 2004	15	2	2
Systems Auditor	2171.4	MDI	JUL 2004	15	2	2
Systems Security Analyst	2171.2	MID	JUL 2004	13	2	2
Translator	5125.1	MId	MAR 2005	15	2	2
Warehousing Professionals	7452.2	OMi	FEB 2006	10	3	4
Web Technician	2281.2	Omi	JUL 2004	13	2	3
Webmaster	2175	IMD	JUL 2004	13	2	2
Word Processing Operator	1411	OMi	OCT 2005	4	4	2

Repair, Maintenance, Personal and Other Services Industry

Occupational Profile Title	NOC Number	Interest Code	Production Date	Education Level	Outlook Level	Lifting Level
Motor Vehicles						
Auto Body Technician	7322	OMi	FEB 2006	6	4	4
Auto Detailer	6662.5	OMd	JAN 2004	3	4	3
Automobile Accessories Installer	9482.1	OMi	SEP 2003	1	3	4
Automotive Service Technician	7321.1	OIM	FEB 2006	6	3	4
Heavy Equipment Technician	7312	OMI	FEB 2006	9	3	4
Heavy Equipment Technician	7321.3	OIM	FEB 2006	9	3	4
Motorcycle Mechanic	7334	OMi	FEB 2006	5	3	4
Parts Technician	1472	MOS	FEB 2006	6	3	3
Recreation Vehicle Service Technician	7383.3	OIM	FEB 2006	6	4	5
Transport Refrigeration Technician	7313	OMI	FEB 2006	9	3	4
Personal/Household Goods						
Appliance Service Technician	7332.1	OMi	FEB 2006	6	3	4
Electronic Technician	2242	OIM	FEB 2006	8	3	4
Jeweller	7344.1	OIM	APR 2003	1	4	2
Locksmith	7383.2	OMi	FEB 2006	6	4	3
Musical Instrument Repair Technician	7445	OMi	MAY 2003	4	3	3
Optical Technician	3414.3	OMi	FEB 2005	1	3	2
Outdoor Power Equipment Technician	7335	OMi	FEB 2006	9	3	5
Upholsterer	7341	OMI	DEC 2003	3	4	4
Watch Repairer	7344.2	OIM	APR 2003	1	4	2
Electronic Equipment						
Automated Systems Technologist	2232.1	OIM	JUL 2004	13	2	4
Avionics Technologist	2244.3	OMi	JUN 2004	13	2	4
Biomedical Engineering Technologist	2241.1	OIM	JUN 2004	13	2	4
Computer Service Technician	2242	OIM	SEP 2004	1	3	4
Electronics Engineering Technologist	2241.1	OIM	SEP 2004	13	2	4
Office Equipment Technician	2242	OIM	APR 2005	1	3	3
Other Machinery/Equipment						
Agricultural Equipment Technician	7312	OMI	FEB 2006	9	3	4
Aircraft Maintenance Engineer	7315.1	OIM	SEP 2003	13	2	4
Electrical Engineering Technologist	2241.1	OIM	SEP 2004	13	2	4
Electrical Motor Systems Technician	7333	OMI	FEB 2006	9	3	4
Elevator Constructor	7318	OMI	FEB 2006	8	3	4
Instrument Technician	2243	OIM	FEB 2006	9	2	4
Millwright	7311	OIM	FEB 2006	7	3	4
Railway Car Mechanic	7314	OMI	JUN 2003	1	4	4
Refrigeration and Air Conditioning Mechanic	7313	OMI	FEB 2006	8	3	4
Sawfiler	7383.5	OMi	FEB 2006	6	4	5
Vending Machine Repairer	7445	OMi	JAN 2004	4	3	4
Personal Care, Laundry and Other Personal Services						
Cosmetician	6482.2	MSO	FEB 2004	1	4	3
Dietitian	3132	DIS	MAR 2003	16	2	2
Domestic Housekeeper	6471.2	MOs	JUL 2003	1	3	4
Dry Cleaning and Laundry Workers	6681.1	OMd	SEP 2003	1	3	3
Electrologist	6482.3	MSO	JAN 2004	1	4	2
Embalmer	6272.2	MOd	NOV 2005	12	4	4
Esthetician	6482.1	MSO	DEC 2003	1	4	2
Food and Nutrition Manager	6212	MDs	MAR 2003	13	3	3
Funeral Attendant	6683.3	OMs	NOV 2005	1	4	4
Funeral Director	6272.1	DSM	NOV 2005	12	4	4
Hairstylist	6271.1	IOS	FEB 2006	6	4	2
Massage Therapist	3235.4	MSO	NOV 2004	1	3	3

Occupational Profile Title	NOC Number	Interest Code	Production Date	Education Level	Outlook Level	Lifting Level
Nanny	6474.2	SMd	JUN 2003	1	3	4
Personal Care Attendant	3413	SMo	JAN 2005	2	3	4
Personal Care Attendant	6471.1	SMo	JAN 2005	2	3	4
Pet Groomer	6483	MOD	JUL 2003	1	3	4
Photographic Processing Technician	9474	OMI	MAY 2005	1	4	2
Psychiatric Aide	3413	SMo	FEB 2005	1	2	4
Religious, Civic, Professional and Other Organizations						
Fundraiser	5124	IMS	FEB 2005	1	3	2
Religious Leader	4154	SMI	NOV 2002	1	4	2
Volunteer Manager	4212	SMi	FEB 2005	1	3	2

Occupational Profile Title	NOC Number	Interest Code	Production Date	Education Level	Outlook Level	Lifting Level
Retail Trade Industry						
Selling Merchandise and Related Services						
Appliance Service Technician	7332.1	OMi	FEB 2006	6	3	4
Auctioneer	6411	SMd	OCT 2003	1	3	3
Auto Body Technician	7322	OMi	FEB 2006	6	4	4
Automotive Service Technician	7321.1	OIM	FEB 2006	6	3	4
Baker	6252	MOd	FEB 2006	5	4	4
Call Centre Agent	1453.2	MSi	NOV 2005	1	3	2
Carpet and Upholstery Cleaner	6662.1	OMd	JUN 2003	1	4	4
Cashier	6611	MOs	OCT 2003	1	4	3
Computer Service Technician	2242	OIM	SEP 2004	1	3	4
Direct Distributor	6623.1	MSd	OCT 2003	1	4	2
Fashion Designer	5243.2	IMD	APR 2005	12	3	2
Floral Designer	6421	MSd	OCT 2003	1	3	4
Gemmologist	7344.1	OIM	APR 2003	4	4	2
Interior Decorator	6421	MSd	MAR 2005	1	3	3
Jeweller	7344.1	OIM	APR 2003	1	4	2
Meat Cutter	6251	MOd	MAY 2003	1	3	4
Motorcycle Mechanic	7334	OMi	FEB 2006	5	3	4
Musical Instrument Repair Technician	7445	OMi	MAY 2003	4	3	3
Optical Technician	3414.3	OMi	FEB 2005	1	3	2
Optician	3231	OMS	FEB 2005	4	3	2
Parts Technician	1472	MOS	FEB 2006	6	3	3
Pharmacist	3131.1	MID	MAR 2005	16	2	3
Pharmacy Assistant/Technician	3414.4	MIO	JAN 2005	1	3	3
Retail Salesperson	6421	MSd	SEP 2003	1	3	3
Retail Shelf Stocker	6622	Mso	SEP 2003	1	3	4
Retail Store Manager	0621	DMi	OCT 2003	1	4	2
Telemarketer	6623.4	Msd	NOV 2005	1	4	2
Upholsterer	7341	OMI	DEC 2003	3	4	4
Vending Machine Route Worker	7414	MOs	MAR 2005	4	3	4
Visual Merchandiser	5243.3	IMD	MAY 2003	1	3	2
Watch Repairer	7344.2	OIM	APR 2003	1	4	2
Related Profiles						
Banquet Manager	0631	DMS	FEB 2004	1	3	2
Cabinetmaker	7272	OMI	FEB 2006	7	3	4
Caterer	0631	DMS	FEB 2004	1	3	4
Cosmetician	6482.2	MSO	FEB 2004	1	4	3
Electrologist	6482.3	MSO	JAN 2004	1	4	2
Electronic Technician	2242	OIM	FEB 2006	8	3	4
Esthetician	6482.1	MSO	DEC 2003	1	4	2
Exhibit Designer	5243.3	IMD	OCT 2003	1	3	3
Financial Customer Service Representative	1433	MSo	OCT 2005	4	4	2
Floorcovering Installer	7295	MOi	FEB 2006	5	3	4
Food and Beverage Server	6453	MSo	MAR 2003	1	3	3
Food Service Helper	6641.3	OMs	MAR 2003	1	3	4
Furniture Mover	7452.1	MOi	OCT 2003	1	3	4
Glazier	7292	MOI	FEB 2006	5	3	5
Hairstylist	6271.1	IOS	FEB 2006	6	4	2
Herbalist	3232.4	SID	JAN 2005	1	3	3
Interior Designer	5242	IMS	MAR 2005	15	3	2
Messenger/Courier	1463	Mos	SEP 2002	1	3	4
Nail Technician	6482.4	MSO	DEC 2003	1	4	2
Office Equipment Technician	2242	OIM	APR 2005	1	3	3

Occupational Profile Title	NOC Number	Interest Code	Production Date	Education Level	Outlook Level	Lifting Level
Outdoor Power Equipment Technician	7335	OMi	FEB 2006	9	3	5
Photographer	5221	IMO	JUN 2005	1	3	3
Photographic Processing Technician	9474	OMI	MAY 2005	1	4	2
Postal/Wicket Clerk	1461.1	Mis	NOV 2005	1	4	4
Private Investigator	6465.2	MIS	APR 2003	1	3	3
Restaurant Manager	0631	DMS	MAR 2003	1	3	2
Security Alarm Installer	2242	OIM	DEC 2003	4	3	3
Shipper and Receiver	1471	MOd	OCT 2005	1	3	4
Travel Consultant	6431	SMI	FEB 2005	1	4	2
Warehousing Professionals	7452.2	OMi	FEB 2006	10	3	4
Indirectly Related Profiles						
Accountant	1111.2	MID	NOV 2005	15	3	2
Accounting Technician	1231	MDi	OCT 2005	4	3	2
Administrative Assistant	1411	OMi	OCT 2005	12	4	2
Building Operator	6663	MOI	FEB 2005	3	4	5
Building Operator	7351	Oim	FEB 2005	3	4	5
Collection Agent	1435	MIs	NOV 2005	4	3	2
Computer and Network Operator	2281.1	OMd	JUL 2004	1	2	3
Computer Engineer	2147.1	IOD	JUL 2004	15	3	3
Computer Programmer	2174.1	IMD	JUL 2004	1	2	2
Cook	6242	MOd	FEB 2006	5	3	4
Custodian	6663	MOI	JUN 2003	1	4	4
Customer Support Analyst	2282	MSo	JUL 2004	1	2	2
Customs Broker	1236.1	MSd	JUN 2003	4	3	2
Demographer	2161.2	IMD	DEC 2005	17	3	2
Dispatcher	1475.1	MDS	JUN 2003	1	3	2
Food Service Supervisor	6212	MDs	MAR 2003	4	3	3
Graphic Designer	5241.1	IMS	MAY 2005	13	3	2
Human Resources Professional	1223	SMd	OCT 2005	13	3	2
Illustrator	5241.2	IMS	JUN 2005	1	3	2
Information Systems Consultant	2171.1	IMD	JUL 2004	15	2	2
Internal Auditor	1111.1	Mid	NOV 2005	15	3	2
Kitchen Helper and Food Assembler	6641.2	OMs	MAR 2003	1	3	4
Lawyer	4112	MID	NOV 2005	17	3	2
Management Consultant	1122.1	IDS	NOV 2005	17	2	2
Marketing Manager	0611.2	DSI	OCT 2005	13	3	2
Operations Manager	0911	DIM	JAN 2006	1	3	2
Power Engineer	7351	Oim	JUL 2005	1	3	4
Pre-Press Technician	9472.5	OMI	DEC 2005	4	3	2
Private Trainer/Facilitator	1121	IMS	NOV 2005	1	3	2
Property Manager	1224	MDs	JAN 2006	4	3	2
Public Relations Representative	5124	IMS	DEC 2005	13	3	2
Purchasing Agent	1225	MDs	MAY 2003	1	3	2
Receptionist	1414.1	SMd	OCT 2005	1	4	2
Sales Representative (Wholesale, Nontechnical)	6411	SMd	OCT 2003	4	3	3
Security Guard	6651	Msd	APR 2003	1	3	3
Software Engineer	2173	IMD	JUL 2004	15	2	2
Technical Sales Representative	6221	OSi	OCT 2003	1	2	2
Truck Driver	7411.1	MOd	OCT 2003	1	3	3
Web Designer	2175	IMD	JUL 2004	13	2	2
Webmaster	2175	IMD	JUL 2004	13	2	2
Word Processing Operator	1411	OMi	OCT 2005	4	4	2

Occupational Profile Title	NOC Number	Interest Code	Production Date	Education Level	Outlook Level	Lifting Level
Transportation and Warehousing Industry						
Transporting Passengers and/or Goods						
Aerospace Engineer	2146	IOD	JUN 2004	15	3	1
Air Traffic Controller	2272.1	OMD	OCT 2005	4	3	2
Aircraft Maintenance Engineer	7315.1	OIM	SEP 2003	13	2	4
Airline Pilot	2271.1	OID	OCT 2003	4	3	3
Airline Ticket Agent	6433.1	MSO	OCT 2003	4	3	2
Avionics Technologist	2244.3	OMi	JUN 2004	13	2	4
Bus Driver	7412.1	OMS	SEP 2003	1	3	4
Bus Line Ticket Agent	6434.1	MSO	OCT 2003	1	3	2
Chauffeur	7413.2	OMS	OCT 2003	1	3	4
Dispatcher	1475.1	MDS	JUN 2003	1	3	2
Flight Attendant	6432.1	MSo	OCT 2003	4	3	4
Flight Service Specialist	2272.3	OIM	OCT 2005	4	3	2
Furniture Mover	7452.1	MOi	OCT 2003	1	3	4
Heavy Equipment Technician	7312	OMI	FEB 2006	9	3	4
Heavy Equipment Technician	7321.3	OIM	FEB 2006	9	3	4
Helicopter Pilot	2271.1	OID	SEP 2003	1	3	4
Municipal Recycling Truck Driver	7411.2	MOd	JUN 2003	1	3	4
Railway Car Mechanic	7314	OMI	JUN 2003	1	4	4
Refuse Truck Driver	7422	OMi	JUN 2003	1	4	4
Station Attendant/Ramp Service Agent	7437	MOi	OCT 2003	4	3	4
Taxi Driver	7413.1	OMS	JUL 2003	1	3	4
Traffic Manager	0713.1	DMs	OCT 2003	1	2	2
Transport Refrigeration Technician	7313	OMI	FEB 2006	9	3	4
Truck Driver	7411.1	MOd	OCT 2003	1	3	3
Vending Machine Route Worker	7414	MOs	MAR 2005	4	3	4
Warehousing and Pipeline Transportation						
Gas Pipeline Operators and Maintenance Workers	9232	Old	AUG 2005	4	2	4
Oil Pipeline Operators and Maintenance Workers	9232	Old	AUG 2005	4	2	4
Warehousing Professionals	7452.2	OMi	FEB 2006	10	3	4
Postal and Courier Services						
Letter Carrier	1462	Mos	NOV 2005	1	4	4
Mail Sorter	1461.2	Mio	NOV 2005	1	4	4
Messenger/Courier	1463	Mos	SEP 2002	1	3	4
Postal/Wicket Clerk	1461.1	Mis	NOV 2005	1	4	4
Related Profiles						
Canadian Forces Personnel - Commissioned Officer	0643	DMs	JAN 2005	1	1	1
Canadian Forces Personnel - Non Commissioned	6464	MOs	JAN 2005	2	1	4
College, Technical or Vocational Instructor	4131	IDS	NOV 2005	13	3	2
Emergency Medical Responder	3234	IMO	NOV 2004	4	3	4
Emergency Medical Technician - Ambulance	3234	IMO	NOV 2004	12	3	4
Emergency Medical Technologist - Paramedic	3234	IMO	NOV 2004	13	3	4
Field Production Operator	9232	Old	AUG 2005	1	2	4
Gas Plant Operator	9232	Old	AUG 2005	1	2	4
Heavy Equipment Operator	7421	OMi	DEC 2003	1	2	3
Hotel and Motel Desk Clerk	6435	SMo	MAY 2003	4	3	2

Occupational Profile Title	NOC Number	Interest Code	Production Date	Education Level	Outlook Level	Lifting Level
Operations Research Analyst	2161.2	IMD	JAN 2006	15	3	2
Refinery/Upgrader Process Operator	9232	Old	AUG 2005	12	2	4
Shipper and Receiver	1471	MOd	OCT 2005	1	3	4
Indirectly Related Profiles						
Accountant	1111.2	MID	NOV 2005	15	3	2
Accounting Technician	1231	MDi	OCT 2005	4	3	2
Administrative Assistant	1411	OMi	OCT 2005	12	4	2
Arbitrator	1121	IMS	OCT 2005	1	3	2
Auto Detailer	6662.5	OMd	JAN 2004	3	4	3
Automotive Service Technician	7321.1	OIM	FEB 2006	6	3	4
Call Centre Agent	1453.2	MSi	NOV 2005	1	3	2
Collection Agent	1435	MIs	NOV 2005	4	3	2
Computer and Network Operator	2281.1	OMd	JUL 2004	1	2	3
Computer Programmer	2174.1	IMD	JUL 2004	1	2	2
Concrete Finisher	7282	OMi	FEB 2006	5	3	4
Cook	6242	MOd	FEB 2006	5	3	4
Custodian	6663	MOI	JUN 2003	1	4	4
Customer Support Analyst	2282	MSo	JUL 2004	1	2	2
Customs Broker	1236.1	MSd	JUN 2003	4	3	2
Demographer	2161.2	IMD	DEC 2005	17	3	2
Ecologist	2121.1	IOD	SEP 2005	17	3	2
Economist	4162	IMD	NOV 2005	17	3	2
Firefighter	6262	OMD	MAY 2003	1	4	4
Human Resources Professional	1223	SMd	OCT 2005	13	3	2
Internal Auditor	1111.1	Mid	NOV 2005	15	3	2
Interpreter	5125.3	MIs	MAR 2005	15	2	2
Lawyer	4112	MID	NOV 2005	17	3	2
Machinist	7231.1	OIM	FEB 2006	7	2	4
Management Consultant	1122.1	IDS	NOV 2005	17	2	2
Marketing Manager	0611.2	DSI	OCT 2005	13	3	2
Mediator	1121	IMS	OCT 2005	1	3	2
Occupational Hygienist	4161.2	IDM	MAR 2005	15	3	2
Operations Manager	0911	DIM	JAN 2006	1	3	2
Parts Technician	1472	MOS	FEB 2006	6	3	3
Police Officer	6261	MDS	APR 2003	1	3	4
Power Engineer	7351	Oim	JUL 2005	1	3	4
Private Trainer/Facilitator	1121	IMS	NOV 2005	1	3	2
Property Manager	1224	MDs	JAN 2006	4	3	2
Public Relations Representative	5124	IMS	DEC 2005	13	3	2
Purchasing Agent	1225	MDs	MAY 2003	1	3	2
Real Estate Agent	6232	SMd	DEC 2005	4	3	2
Receptionist	1414.1	SMd	OCT 2005	1	4	2
Safety Officer	2263	MID	MAR 2005	1	3	3
Sales Representative (Wholesale, Nontechnical)	6411	SMd	OCT 2003	4	3	3
Security Guard	6651	Msd	APR 2003	1	3	3
Statistician	2161.2	IMD	DEC 2005	15	3	2
Technical Sales Representative	6221	OSi	OCT 2003	1	2	2
Web Designer	2175	IMD	JUL 2004	13	2	2
Webmaster	2175	IMD	JUL 2004	13	2	2
Word Processing Operator	1411	OMi	OCT 2005	4	4	2

Occupational Profile Title	NOC Number	Interest Code	Production Date	Education Level	Outlook Level	Lifting Level
Utilities Industry						
Power, Water and Gas Utilities						
Gas Utility Operator	7442.2	MOi	FEB 2006	10	4	4
Power Lineman	7244	Oim	FEB 2006	9	3	4
Power System Electrician	7243	Oim	FEB 2006	9	2	3
Utility Clerk	1453.2	MSi	NOV 2005	4	3	2
Water and Wastewater Treatment Plant Operator	9424.1	OIM	FEB 2003	4	4	4
Water and Wastewater Treatment Plant Operator	9424.2	OIM	FEB 2003	4	4	4
Related Profiles						
Call Centre Agent	1453.2	MSi	NOV 2005	1	3	2
Dispatcher	1475.1	MDS	JUN 2003	1	3	2
Electrician	7241	Oim	FEB 2006	8	2	4
Electrician	7242	Oim	FEB 2006	8	2	4
Environmental Auditor	2263	MID	SEP 2005	15	3	2
Environmental Engineer	2131	IOD	JUN 2004	15	2	2
Gasfitter	7253	OMi	FEB 2006	5	3	5
Heavy Equipment Operator	7421	OMi	DEC 2003	1	2	3
Instrument Technician	2243	OIM	FEB 2006	9	2	4
Pollution Control Technologist	2211.1	OIM	SEP 2005	13	3	4
Power Engineer	7351	Oim	JUL 2005	1	3	4
Indirectly Related Profiles						
Aboriginal Liaison	1221	MDS	MAR 2005	1	3	2
Accountant	1111.2	MID	NOV 2005	15	3	2
Accounting Technician	1231	MDi	OCT 2005	4	3	2
Administrative Assistant	1411	OMi	OCT 2005	12	4	2
Collection Agent	1435	MIs	NOV 2005	4	3	2
Computer and Network Operator	2281.1	OMd	JUL 2004	1	2	3
Computer Programmer	2174.1	IMD	JUL 2004	1	2	2
Custodian	6663	MOI	JUN 2003	1	4	4
Ecologist	2121.1	IOD	SEP 2005	17	3	2
Heavy Equipment Technician	7312	OMI	FEB 2006	9	3	4
Heavy Equipment Technician	7321.3	OIM	FEB 2006	9	3	4
Human Resources Professional	1223	SMd	OCT 2005	13	3	2
Information Systems Consultant	2171.1	IMD	JUL 2004	15	2	2
Internal Auditor	1111.1	Mid	NOV 2005	15	3	2
Operations Manager	0911	DIM	JAN 2006	1	3	2
Public Relations Representative	5124	IMS	DEC 2005	13	3	2
Purchasing Agent	1225	MDs	MAY 2003	1	3	2
Safety Officer	2263	MID	MAR 2005	1	3	3
Security Guard	6651	Msd	APR 2003	1	3	3
Software Engineer	2173	IMD	JUL 2004	15	2	2
Warehousing Professionals	7452.2	OMi	FEB 2006	10	3	4
Web Technician	2281.2	Omi	JUL 2004	13	2	3
Webmaster	2175	IMD	JUL 2004	13	2	2
Word Processing Operator	1411	OMi	OCT 2005	4	4	2

Occupational Profile Title	NOC Number	Interest Code	Production Date	Education Level	Outlook Level	Lifting Level
Wholesale Trade Industry						
Wholesale Sales and Distribution						
Auctioneer	6411	SMd	OCT 2003	1	3	3
Direct Distributor	6623.1	MSd	OCT 2003	1	4	2
Sales Representative (Wholesale, Nontechnical)	6411	SMd	OCT 2003	4	3	3
Shipper and Receiver	1471	MOd	OCT 2005	1	3	4
Technical Sales Representative	6221	OSi	OCT 2003	1	2	2
Truck Driver	7411.1	MOd	OCT 2003	1	3	3
Warehousing Professionals	7452.2	OMi	FEB 2006	10	3	4
Related Profiles						
Agricultural Equipment Technician	7312	OMI	FEB 2006	9	3	4
Customs Broker	1236.1	MSd	JUN 2003	4	3	2
Furniture Mover	7452.1	MOi	OCT 2003	1	3	4
Gemmologist	7344.1	OIM	APR 2003	4	4	2
Heavy Equipment Technician	7312	OMI	FEB 2006	9	3	4
Heavy Equipment Technician	7321.3	OIM	FEB 2006	9	3	4
Marketing Manager	0611.2	DSI	OCT 2005	13	3	2
Meat Cutter	6251	MOd	MAY 2003	1	3	4
Parts Technician	1472	MOS	FEB 2006	6	3	3
Traffic Manager	0713.1	DMs	OCT 2003	1	2	2
Vending Machine Repairer	7445	OMi	JAN 2004	4	3	4
Indirectly Related Profiles						
Accountant	1111.2	MID	NOV 2005	15	3	2
Accounting Technician	1231	MDi	OCT 2005	4	3	2
Administrative Assistant	1411	OMi	OCT 2005	12	4	2
Collection Agent	1435	MIs	NOV 2005	4	3	2
Computer and Network Operator	2281.1	OMd	JUL 2004	1	2	3
Computer Programmer	2174.1	IMD	JUL 2004	1	2	2
Custodian	6663	MOI	JUN 2003	1	4	4
Dispatcher	1475.1	MDS	JUN 2003	1	3	2
Human Resources Professional	1223	SMd	OCT 2005	13	3	2
Information Systems Consultant	2171.1	IMD	JUL 2004	15	2	2
Internal Auditor	1111.1	Mid	NOV 2005	15	3	2
Security Guard	6651	Msd	APR 2003	1	3	3
Software Engineer	2173	IMD	JUL 2004	15	2	2
Systems Auditor	2171.4	MDI	JUL 2004	15	2	2
Systems Security Analyst	2171.2	MID	JUL 2004	13	2	2
Webmaster	2175	IMD	JUL 2004	13	2	2
Word Processing Operator	1411	OMi	OCT 2005	4	4	2

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Occupational Profiles by Production Date

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Production Date	Occupational Profile Title	NOC Number	Interest Code	Education Level	Outlook Level	Lifting Level
JUN 2002	Stage Manager	5226.7	DMO	1	3	2
SEP 2002	Messenger/Courier	1463	Mos	1	3	4
SEP 2002	Telephone Operator	1424	MSO	4	4	2
NOV 2002	Religious Leader	4154	SMI	1	4	2
JAN 2003	Investment Underwriter	1114.4	MID	17	3	2
FEB 2003	Water and Wastewater Treatment Plant Operator	9424.1	OIM	4	4	4
FEB 2003	Water and Wastewater Treatment Plant Operator	9424.2	OIM	4	4	4
MAR 2003	Accommodation Manager	0632	DMS	13	3	2
MAR 2003	Bartender	6452	MSd	4	3	3
MAR 2003	Chef	6241.1	DMI	1	3	3
MAR 2003	Dietitian	3132	DIS	16	2	2
MAR 2003	Food and Beverage Server	6453	MSo	1	3	3
MAR 2003	Food and Beverage Service Supervisor In Formal Dining Rooms	6212	MDs	1	3	2
MAR 2003	Food and Nutrition Manager	6212	MDs	13	3	3
MAR 2003	Food Service Helper	6641.3	OMs	1	3	4
MAR 2003	Food Service Supervisor	6212	MDs	4	3	3
MAR 2003	Guest Services Attendant	6672.1	OSM	1	3	4
MAR 2003	Kitchen Helper and Food Assembler	6641.2	OMs	1	3	4
MAR 2003	Restaurant Manager	0631	DMS	1	3	2
MAR 2003	Room/Housekeeping Attendant	6661	MOi	1	4	4
APR 2003	Bylaw Enforcement Officer	6463.2	MDs	1	3	4
APR 2003	Correctional Officer	6462	MDs	4	4	4
APR 2003	Correctional Services Worker	4155.2	SMI	13	3	3
APR 2003	Gemmologist	7344.1	OIM	4	4	2
APR 2003	Jeweller	7344.1	OIM	1	4	2
APR 2003	Parole/Probation Officer	4155.1	SMD	13	3	2
APR 2003	Police Officer	6261	MDS	1	3	4
APR 2003	Private Investigator	6465.2	MIS	1	3	3
APR 2003	Security Guard	6651	Msd	1	3	3
APR 2003	Special Event Co-ordinator	1226	DSI	13	3	2
APR 2003	Television Audio/Video Operator	5225	OMI	13	3	2
APR 2003	Television Camera Operator	5222	OMI	13	3	4
APR 2003	Watch Repairer	7344.2	OIM	1	4	2
MAY 2003	Actor	5135.1	MId	1	3	3
MAY 2003	Announcer	5231	MSI	12	3	3
MAY 2003	Casting Director	5226.7	DMO	1	3	2
MAY 2003	Choral Conductor	5132.1	DIM	1	3	2
MAY 2003	Cinematographer	5131.7	DIO	1	3	2
MAY 2003	Composer	5132.2	IMd	1	3	2
MAY 2003	Conservator	5112.1	Dim	15	4	4
MAY 2003	Customs Inspector	1228.3	MDO	4	3	2
MAY 2003	Executive Housekeeper	6213	MDs	1	3	2
MAY 2003	Firefighter	6262	OMD	1	4	4
MAY 2003	Foreign Service Officer	4168	DIS	17	4	2
MAY 2003	Hotel and Motel Desk Clerk	6435	SMo	4	3	2
MAY 2003	Immigration Officer	1228.1	MDS	4	3	2
MAY 2003	Instrumental Musician	5133.1	OMI	1	3	3
MAY 2003	Land Titles Examiner	4211.1	MSI	4	3	2
MAY 2003	Make-Up Artist	5226.5	OMI	1	3	3
MAY 2003	Meat Cutter	6251	MOd	1	3	4
MAY 2003	Music Copyist	5132.3	DIm	1	3	2

Production Date	Occupational Profile Title	NOC Number	Interest Code	Education Level	Outlook Level	Lifting Level
MAY 2003	Musical Instrument Repair Technician	7445	OMi	4	3	3
MAY 2003	Orchestra/Band Conductor	5132.1	DIM	15	3	2
MAY 2003	Orchestrator/Arranger	5132.3	DIm	1	3	2
MAY 2003	Producer - Film, Radio, Television and Theatre	5131.1	IDS	1	3	2
MAY 2003	Purchasing Agent	1225	MDs	1	3	2
MAY 2003	Recording/Sound Engineer	5225	OMI	1	3	2
MAY 2003	Safety Codes Officer	2264	MId	1	3	2
MAY 2003	Singer	5133.2	Mid	1	3	2
MAY 2003	Songwriter	5132.2	IMd	1	3	2
MAY 2003	Traffic Co-ordinator	1473	MIs	4	3	2
MAY 2003	Travel Guide	6441.2	SMd	1	3	4
MAY 2003	Visual Merchandiser	5243.3	IMD	1	3	2
JUN 2003	Carpet and Upholstery Cleaner	6662.1	OMd	1	4	4
JUN 2003	Custodian	6663	MOI	1	4	4
JUN 2003	Customs Broker	1236.1	MSd	4	3	2
JUN 2003	Dispatcher	1475.1	MDS	1	3	2
JUN 2003	Municipal Administrator	0414	DIM	13	4	2
JUN 2003	Municipal Recycling Truck Driver	7411.2	MOd	1	3	4
JUN 2003	Municipal Recycling Waste Handler	9619	MOi	1	4	4
JUN 2003	Nanny	6474.2	SMd	1	3	4
JUN 2003	Railway Car Mechanic	7314	OMI	1	4	4
JUN 2003	Refuse Collector	7621	Moi	1	4	4
JUN 2003	Refuse Truck Driver	7422	OMi	1	4	4
JUN 2003	Tour Guide	6441.1	SMd	1	3	2
JUN 2003	Urban, Regional and Park Planners	2153	ISD	15	2	2
JUL 2003	Choreographer	5131.3	IDS	1	3	3
JUL 2003	Dancer	5134.1	Mid	1	3	4
JUL 2003	Domestic Housekeeper	6471.2	MOs	1	3	4
JUL 2003	Judge	4111	DMI	18	1	2
JUL 2003	Pet Groomer	6483	MOD	1	3	4
JUL 2003	Taxi Driver	7413.1	OMS	1	3	4
AUG 2003	Sterile Processing Technician	3414.5	OMi	4	3	3
SEP 2003	Aircraft Maintenance Engineer	7315.1	OIM	13	2	4
SEP 2003	Automobile Accessories Installer	9482.1	OMi	1	3	4
SEP 2003	Bus Driver	7412.1	OMS	1	3	4
SEP 2003	Curator	5112.2	DMI	15	4	4
SEP 2003	Dry Cleaning and Laundry Workers	6681.1	OMd	1	3	3
SEP 2003	Electronics Assemblers and Fabricators	9483.1	OMi	1	2	2
SEP 2003	Hearing Aid Practitioner	3235.1	MSO	13	3	2
SEP 2003	Helicopter Pilot	2271.1	OID	1	3	4
SEP 2003	Home Inspector	2264	MId	1	3	3
SEP 2003	Life Skills Coach	4212	SMi	1	3	2
SEP 2003	Retail Salesperson	6421	MSd	1	3	3
SEP 2003	Retail Shelf Stocker	6622	Mso	1	3	4
SEP 2003	Theatre Director	5131.2	IDS	15	3	2
OCT 2003	Airline Pilot	2271.1	OID	4	3	3
OCT 2003	Airline Ticket Agent	6433.1	MSO	4	3	2
OCT 2003	Auctioneer	6411	SMd	1	3	3
OCT 2003	Bus Line Ticket Agent	6434.1	MSO	1	3	2
OCT 2003	Cashier	6611	MOs	1	4	3
OCT 2003	Chauffeur	7413.2	OMS	1	3	4
OCT 2003	Craftsperson	5244	IOM	1	3	2
OCT 2003	Direct Distributor	6623.1	MSd	1	4	2
OCT 2003	Driving Instructor	4216.1	SDM	1	4	2
OCT 2003	Exhibit Designer	5243.3	IMD	1	3	3
OCT 2003	Film Director	5131.2	IDS	15	3	2
OCT 2003	Flight Attendant	6432.1	MSo	4	3	4
OCT 2003	Floral Designer	6421	MSd	1	3	4

Production Date	Occupational Profile Title	NOC Number	Interest Code	Education Level	Outlook Level	Lifting Level
OCT 2003	Furniture Mover	7452.1	MOi	1	3	4
OCT 2003	Museum Technician	5212.6	OMi	13	4	4
OCT 2003	Retail Store Manager	0621	DMi	1	4	2
OCT 2003	Sales Representative (Wholesale, Nontechnical)	6411	SMd	4	3	3
OCT 2003	Station Attendant/Ramp Service Agent	7437	MOi	4	3	4
OCT 2003	Technical Sales Representative	6221	OSi	1	2	2
OCT 2003	Traffic Manager	0713.1	DMs	1	2	2
OCT 2003	Truck Driver	7411.1	MOd	1	3	3
NOV 2003	Heritage Interpreter	5212.3	SMd	13	4	2
NOV 2003	Instrumentation Engineering Technologist	2232.1	OIM	13	2	2
NOV 2003	Instrumentation Engineering Technologist	2241.1	OIM	13	2	2
NOV 2003	Interpretive Naturalist	2121.1	IOD	13	3	2
DEC 2003	Esthetician	6482.1	MSO	1	4	2
DEC 2003	Greenhouse Operator	8254	DMS	13	4	2
DEC 2003	Heavy Equipment Operator	7421	OMi	1	2	3
DEC 2003	Nail Technician	6482.4	MSO	1	4	2
DEC 2003	Nursery Operator	8254	DMS	13	4	3
DEC 2003	Personal Property/Equipment Appraiser	1235.3	Mds	1	4	2
DEC 2003	Plasterer	7284.1	MOi	1	3	4
DEC 2003	Public Health Inspector	2263	MID	15	3	3
DEC 2003	School Business Official	0313.2	DMs	1	3	2
DEC 2003	Security Alarm Installer	2242	OIM	4	3	3
DEC 2003	Upholsterer	7341	OMI	3	4	4
JAN 2004	Auto Detailer	6662.5	OMd	3	4	3
JAN 2004	Electrologist	6482.3	MSO	1	4	2
JAN 2004	Vending Machine Repairer	7445	OMi	4	3	4
FEB 2004	Advertising Account Executive	1122.2	ISD	1	2	2
FEB 2004	Banquet Manager	0631	DMS	1	3	2
FEB 2004	Caterer	0631	DMS	1	3	4
FEB 2004	Cosmetician	6482.2	MSO	1	4	3
FEB 2004	Costume Designer	5243.1	IMD	1	3	2
FEB 2004	Electrical Contractor	7212	Dio	1	3	2
FEB 2004	Lighting Designer	5243.1	IMD	1	3	2
FEB 2004	Plastics Processing Technician	2233.2	OMi	1	3	4
FEB 2004	Set Designer	5243.1	IMD	1	3	2
FEB 2004	Telecommunications Engineering Technologist	2241.1	OIM	13	2	4
FEB 2004	Wildland Firefighter	8422	OMi	1	4	5
JUN 2004	Aerospace Engineer	2146	IOD	15	3	1
JUN 2004	Agricultural Engineer	2148.1	IOD	15	3	4
JUN 2004	Avionics Technologist	2244.3	OMi	13	2	4
JUN 2004	Biomedical Engineering Technologist	2241.1	OIM	13	2	4
JUN 2004	Chemical Engineer	2134	IOD	15	2	4
JUN 2004	Chemical Technologist	2211.1	OIM	13	3	2
JUN 2004	Civil Engineer	2131	IOD	15	2	1
JUN 2004	Civil Engineering Technologist	2231.1	IMd	13	2	3
JUN 2004	Environmental Engineer	2131	IOD	15	2	2
JUN 2004	Exploration Geophysicist	2113	IOD	15	3	4
JUN 2004	Geologist	2113	IOD	15	3	2
JUN 2004	Geomatics/Surveying Technologist	2254.1	OIM	13	3	4
JUN 2004	Industrial Engineer	2141	IOD	15	3	2
JUN 2004	Manufacturing Engineer	2141	IOD	15	3	2
JUN 2004	Petroleum Engineer	2145	IOD	15	2	3
JUL 2004	Automated Systems Technologist	2232.1	OIM	13	2	4
JUL 2004	Broadcast Maintenance Technologist	5224	OMi	13	3	2
JUL 2004	Chemical Engineering Technologist	2211.1	OIM	13	3	2
JUL 2004	Chemist	2112	IOD	15	3	2
JUL 2004	Computer and Network Operator	2281.1	OMd	1	2	3

Production Date	Occupational Profile Title	NOC Number	Interest Code	Education Level	Outlook Level	Lifting Level
JUL 2004	Computer Engineer	2147.1	IOD	15	3	3
JUL 2004	Computer Programmer	2174.1	IMD	1	2	2
JUL 2004	Customer Support Analyst	2282	MSo	1	2	2
JUL 2004	Data Administrator	2172.2	IMD	13	2	2
JUL 2004	Database Analyst	2172.1	IMD	13	2	2
JUL 2004	Geomatics/Surveying Engineer	2131	IOD	15	2	4
JUL 2004	Information Systems Consultant	2171.1	IMD	15	2	2
JUL 2004	Information Systems Quality Assurance Analyst	2171.3	IMD	13	2	2
JUL 2004	Interactive Media Developer	2174.2	IMD	13	2	2
JUL 2004	Land Surveyor	2154	IOD	15	3	3
JUL 2004	Materials Engineering Technologist	2233.1	IMd	13	3	4
JUL 2004	Materials/Metallurgical Engineer	2142	IOD	15	3	3
JUL 2004	Mechanical Engineering Technologist	2232.1	OIM	13	2	3
JUL 2004	Mining Engineer	2143	IOD	15	3	3
JUL 2004	Software Engineer	2173	IMD	15	2	2
JUL 2004	Systems Auditor	2171.4	MDI	15	2	2
JUL 2004	Systems Security Analyst	2171.2	MID	13	2	2
JUL 2004	Systems Tester	2283	MOi	1	2	2
JUL 2004	Web Designer	2175	IMD	13	2	2
JUL 2004	Web Technician	2281.2	Omi	13	2	3
JUL 2004	Webmaster	2175	IMD	13	2	2
AUG 2004	Electrical Engineer	2133	IOD	15	2	3
SEP 2004	Casino Dealer	6443.2	SMD	3	3	2
SEP 2004	Community Health Nurse	3152.3	DMD	14	2	2
SEP 2004	Computer Service Technician	2242	OIM	1	3	4
SEP 2004	Electrical Engineering Technologist	2241.1	OIM	13	2	4
SEP 2004	Electronics Engineering Technologist	2241.1	OIM	13	2	4
SEP 2004	Licensed Practical Nurse	3233.1	MSO	12	2	4
SEP 2004	Licensed Practical Nurse (Advanced Orthopaedic Specialty)	3233.1	MSO	13	2	4
SEP 2004	Mechanical Engineer	2132	IOD	15	2	2
SEP 2004	Occupational Health Nurse	3152.2	SMD	14	2	3
SEP 2004	Psychiatric Nurse	3152.4	SMD	13	2	4
SEP 2004	Registered Nurse	3152.1	SMD	14	2	4
OCT 2004	Dental Assistant	3411	MSO	12	2	2
OCT 2004	Geological and Geophysical Technologist	2212.1	Old	13	3	4
OCT 2004	Health Information Management Professional	1413.3	Mid	13	4	2
OCT 2004	Homeopath	3232.5	SID	16	3	2
OCT 2004	Industrial Engineering Technologist	2233.1	IMd	13	3	2
OCT 2004	Nurse Practitioner	3152	SMD	17	2	3
OCT 2004	Petroleum Engineering Technologist	2212.1	Old	13	3	3
OCT 2004	Psychiatrist	3111.1	ISD	19	2	2
NOV 2004	Cardiology Technologist	3217	OMi	12	2	4
NOV 2004	Dental Hygienist	3222.1	MOS	14	3	3
NOV 2004	Dentist	3113	IOs	17	2	2
NOV 2004	Denturist	3221	MOI	13	3	2
NOV 2004	Electroneurophysiology (ENP) Technologist	3218.1	OMi	13	2	3
NOV 2004	Emergency Medical Responder	3234	IMO	4	3	4
NOV 2004	Emergency Medical Technician - Ambulance	3234	IMO	12	3	4
NOV 2004	Emergency Medical Technologist - Paramedic	3234	IMO	13	3	4
NOV 2004	Gerontological Specialist	4169.9	IDM	1	3	2
NOV 2004	Massage Therapist	3235.4	MSO	1	3	3
NOV 2004	Nuclear Medicine Technologist	3215.2	OMi	13	2	4
NOV 2004	Pediatrician	3111.1	ISD	19	2	3
NOV 2004	Physician	3112	ISD	19	2	3
NOV 2004	Reflexologist	3232.6	SIM	1	3	2
DEC 2004	Audiologist	3141.1	OIS	17	2	2

Production Date	Occupational Profile Title	NOC Number	Interest Code	Education Level	Outlook Level	Lifting Level
DEC 2004	Chiropractic Assistant	3414.2	MSo	4	3	3
DEC 2004	Chiropractor	3122	ISM	18	2	4
DEC 2004	Dental Technologist	3223.1	MOI	13	3	4
DEC 2004	Diagnostic Medical Sonographer	3216	OMi	14	2	3
DEC 2004	Geriatric Medicine Specialist	3111.1	ISD	19	2	2
DEC 2004	Occupational Therapist Assistant	3414.2	MSo	13	3	4
DEC 2004	Pathologist	3111.2	IOD	19	2	2
DEC 2004	Physical Therapy Assistant	3414.2	MSo	1	3	4
DEC 2004	Radiation Therapist	3215.3	OMi	13	2	3
DEC 2004	Speech-Language Pathologist	3141.2	MIS	17	2	2
DEC 2004	Speech-Language Pathologist Assistant	3235.3	MSO	1	3	2
DEC 2004	Sport Medicine Physician	3112	ISD	19	2	3
JAN 2005	Biologist	2121.1	IOD	15	3	2
JAN 2005	Canadian Forces Personnel - Commissioned Officer	0643	DMs	1	1	1
JAN 2005	Canadian Forces Personnel - Non Commissioned	6464	MOs	2	1	4
JAN 2005	Expressive Arts Therapists	3144	SIM	17	2	1
JAN 2005	Herbalist	3232.4	SID	1	3	3
JAN 2005	Midwife	3232.1	SID	15	3	4
JAN 2005	Ophthalmic Assistant	3235.5	MSO	4	3	2
JAN 2005	Optometrist	3121	OSD	17	2	2
JAN 2005	Personal Care Attendant	3413	SMo	2	3	4
JAN 2005	Personal Care Attendant	6471.1	SMo	2	3	4
JAN 2005	Pharmacy Assistant/Technician	3414.4	MIO	1	3	3
JAN 2005	Radiological Technologist	3215.1	OMi	13	2	3
JAN 2005	Respiratory Therapist	3214.1	OMi	14	2	3
FEB 2005	Agricultural Commodity Inspector	2222.2	Mid	1	3	3
FEB 2005	Agricultural Products Processing Machine Operator	9461.2	OMi	1	3	4
FEB 2005	Animal Care Attendant	6483	MOD	1	3	4
FEB 2005	Animal Health Technologist	3213	MOI	13	3	4
FEB 2005	Building Operator	6663	MOI	3	4	5
FEB 2005	Building Operator	7351	Oim	3	4	5
FEB 2005	Combined Laboratory and X-Ray Technologist	3211.1	MIO	13	2	4
FEB 2005	Combined Laboratory and X-Ray Technologist	3215.1	OMi	13	2	4
FEB 2005	Dairy Producer	8251	DMO	1	4	4
FEB 2005	Farm Worker/Technician	8431	MOi	1	4	4
FEB 2005	Fund [illegible]er	5124	IMS	1	3	2
FEB 2005	Grain [illegible]d Forage Crop Producer	8251	DMO	1	4	4
FEB 2005	Health Service Administrator	0311	DMI	1	3	2
FEB 2005	Medical Laboratory Technologist	3211.1	MIO	13	2	3
FEB 2005	Mortgage Agent	1232	MSd	4	3	2
FEB 2005	Naturopathic Doctor	3123.3	IMS	18	2	3
FEB 2005	Occupational Therapist	3143	SIM	15	2	4
FEB 2005	Optical Technician	3414.3	OMi	1	3	2
FEB 2005	Optician	3231	OMS	4	3	2
FEB 2005	Pharmacologist	2121.2	IOD	15	3	2
FEB 2005	Physiotherapist	3142	MIS	17	2	4
FEB 2005	Podiatrist	3123.1	IMO	19	2	2
FEB 2005	Psychiatric Aide	3413	SMo	1	2	4
FEB 2005	Recreation Therapist	3144	SIM	13	2	3
FEB 2005	Rehabilitation Practitioner	4212	SMi	13	3	2
FEB 2005	Swine Technician	8253.2	MId	3	4	4
FEB 2005	Toxicologist	2121.2	IOD	15	3	2
FEB 2005	Travel Consultant	6431	SMI	1	4	2
FEB 2005	Volunteer Manager	4212	SMi	1	3	2
MAR 2005	Aboriginal Liaison	1221	MDS	1	3	2

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MAR 2005	Acupuncturist	3232.2	SIM	14	3	3
MAR 2005	Arborist	2225.1	OMd	1	3	4
MAR 2005	Architect	2151	ISD	17	3	2
MAR 2005	Architectural Technologist	2251	IMO	13	3	2
MAR 2005	Athletic Therapist	3144	SIM	15	2	4
MAR 2005	Beekeeper	8251	DMO	1	4	4
MAR 2005	Blaster	7372.2	OID	1	2	4
MAR 2005	Coach	5252.1	DSM	1	3	2
MAR 2005	Feed Mill Production Worker	9461.2	OMi	1	3	4
MAR 2005	Fitness Instructor	5254	MSi	4	2	4
MAR 2005	Food Science Technologist	2211.1	OIM	13	3	2
MAR 2005	Food Scientist	2121.1	IOD	15	3	2
MAR 2005	Golf Professional	5254	MSi	14	2	4
MAR 2005	Home Economist	4164.2	IDS	15	4	3
MAR 2005	Interior Decorator	6421	MSd	1	3	3
MAR 2005	Interior Designer	5242	IMS	15	3	2
MAR 2005	Interpreter	5125.3	MIs	15	2	2
MAR 2005	Kinesiologist	4167.1	SDI	15	3	4
MAR 2005	Landscape Architect	2152	ISD	15	3	2
MAR 2005	Landscape Architectural Technologist	2225.4	OMD	13	3	2
MAR 2005	Livestock/Poultry Producer	8251	DMO	1	4	4
MAR 2005	Market Gardener	8251	DMO	1	4	4
MAR 2005	Occupational Health and Safety Inspector	2263	MID	1	3	2
MAR 2005	Occupational Hygienist	4161.2	IDM	15	3	2
MAR 2005	Pest Control Operator	7444	OMi	1	4	4
MAR 2005	Pharmacist	3131.1	MID	16	2	3
MAR 2005	Professional Athlete	5251	Mdi	1	3	4
MAR 2005	Prosthetic/Orthotic Technician	3219.4	OIM	13	2	4
MAR 2005	Prosthetist and Orthotist	3219.3	OID	13	2	4
MAR 2005	Recreation and Sport Administrator	0513	DMI	15	3	2
MAR 2005	Recreation Co-ordinator/Supervisor	4167.5	SDI	13	3	4
MAR 2005	Recreation Facility Operator	6671.2	MOS	1	3	4
MAR 2005	Safety Officer	2263	MID	1	3	3
MAR 2005	Seed Cleaning/Conditioning Plant Manager	8252	OMi	1	4	2
MAR 2005	Sign Language Interpreter	5125.3	MIs	13	2	2
MAR 2005	Sports Instructor	5254	MSi	1	2	4
MAR 2005	Sports Official	5253	MDs	1	3	2
MAR 2005	Translator	5125.1	MId	15	2	2
MAR 2005	Turfgrass Management Specialist	2225.2	OMD	1	3	4
MAR 2005	Vending Machine Route Worker	7414	MOs	4	3	4
MAR 2005	Veterinarian	3114	IOs	17	3	4
APR 2005	Community Health Representative	4212	SMi	12	3	2
APR 2005	Fashion Designer	5243.2	IMD	12	3	2
APR 2005	Land Agent	1225	MDs	1	3	2
APR 2005	Mapping Technologist	2255.1	IMO	13	3	2
APR 2005	Model	5232.4	SMi	1	3	2
APR 2005	Office Equipment Technician	2242	OIM	1	3	3
APR 2005	Physiologist	2121.1	IOD	19	3	2
MAY 2005	Advertising Copywriter	5121.3	IMd	1	3	2
MAY 2005	Animator	5241.1	IMS	1	3	2
MAY 2005	Cartoonist	5241.1	IMS	1	3	2
MAY 2005	Creative Writer	5121.1	IMd	1	3	2
MAY 2005	Critic	5123	ISM	1	4	2
MAY 2005	Farrier	7266.1	OMI	1	4	4
MAY 2005	Graphic Designer	5241.1	IMS	13	3	2
MAY 2005	Outdoor Sport/Recreation Guide	6442	SMO	1	3	4
MAY 2005	Photographic Processing Technician	9474	OMI	1	4	2
MAY 2005	Reporter	5123	ISM	13	4	2

Production Date	Occupational Profile Title	NOC Number	Interest Code	Education Level	Outlook Level	Lifting Level
JUN 2005	Illustrator	5241.2	IMS	1	3	2
JUN 2005	Mental Health Worker	4212	SMi	13	3	2
JUN 2005	Photographer	5221	IMO	1	3	3
JUN 2005	Sculptor	5136.2	IOm	1	3	3
JUN 2005	Technical Writer	5121.2	IMo	1	3	2
JUL 2005	Drilling Rig Leasehand/Floorhand	8412.1	OMd	3	2	5
JUL 2005	Editor	5122	DIS	15	3	2
JUL 2005	Industrial Designer	2252	IMO	1	4	2
JUL 2005	Lighting Technician	5226.3	OMi	1	3	4
JUL 2005	Magnetic Resonance Technologist	3215	OMI	13	2	4
JUL 2005	Painter/Printmaker	5136.1	IOm	1	3	2
JUL 2005	Power Engineer	7351	Oim	1	3	4
JUL 2005	Psychologist	4151	SIM	17	3	2
JUL 2005	Rig Technician	8232.1	ODm	9	2	4
JUL 2005	Rig Technician	8412.1	OMd	9	2	4
JUL 2005	Service Rig Personnel	8412.1	OMd	3	2	5
JUL 2005	Well Service Equipment Operator	8412.2	OMi	4	2	4
AUG 2005	Agrologist	2123	ISD	15	3	2
AUG 2005	Commercial Diver	7382	OIM	12	3	4
AUG 2005	Drafting Technician	2253.2	MIO	12	3	2
AUG 2005	Drilling and Service Rig Managers	8222	Dio	4	2	4
AUG 2005	Engineering Design and Drafting Technologist	2253.1	MIO	13	3	2
AUG 2005	Field Production Operator	9232	Old	1	2	4
AUG 2005	Gas Pipeline Operators and Maintenance Workers	9232	Old	4	2	4
AUG 2005	Gas Plant Operator	9232	Old	1	2	4
AUG 2005	Geographer	4169.3	IDM	15	3	2
AUG 2005	Oil and Gas Well Loggers and Testers	8232.2	OMi	1	2	4
AUG 2005	Oil Pipeline Operators and Maintenance Workers	9232	Old	4	2	4
AUG 2005	Refinery/Upgrader Process Operator	9232	Old	12	2	4
AUG 2005	Surface Mining Equipment Operator	7421	OMi	1	2	4
AUG 2005	Underground Miner	8231	OIM	1	4	4
SEP 2005	Biochemist	2112	IOD	15	3	2
SEP 2005	Biological Technician	2221.2	Moi	13	3	3
SEP 2005	Biotechnologist	2121.2	IOD	15	3	2
SEP 2005	Ecologist	2121.1	IOD	17	3	2
SEP 2005	Entomologist	2121.1	IOD	15	3	2
SEP 2005	Environmental Auditor	2263	MID	15	3	2
SEP 2005	Hydrologist	2113	IOD	15	3	4
SEP 2005	Microbiologist	2121.2	IOD	15	3	2
SEP 2005	Seismic Observer	2212.2	OMi	1	3	4
SEP 2005	Seismic Worker	8615	MOi	1	2	4
SEP 2005	Wireline Field Supervisor	8222	Dio	1	2	2
SEP 2005	Soil Scientist	2115.2	IOD	15	3	2
SEP 2005	Hazardous Waste Management Technologist	2263	MID	13	3	4
SEP 2005	Hydrometric Technician/Technologist	2212.1	Old	13	3	3
SEP 2005	Pollution Control Technologist	2211.1	OIM	13	3	4
OCT 2005	Accounting Technician	1231	MDi	4	3	2
OCT 2005	Administrative Assistant	1411	OMi	12	4	2
OCT 2005	Air Traffic Controller	2272.1	OMD	4	3	2
OCT 2005	Arbitrator	1121	IMS	1	3	2
OCT 2005	Environmental Education Specialist	4131	IDS	15	3	2
OCT 2005	Financial Customer Service Representative	1433	MSo	4	4	2
OCT 2005	Financial Planner	1114.1	MID	1	3	2
OCT 2005	Forensic Laboratory Analyst	2211.1	OIM	13	3	2
OCT 2005	Human Resources Professional	1223	SMd	13	3	2
OCT 2005	Legal and Realtime Reporter	1244.1	MOi	13	3	2

Production Date	Occupational Profile Title	NOC Number	Interest Code	Education Level	Outlook Level	Lifting Level
OCT 2005	Legal Secretary	1242	MOd	12	3	2
OCT 2005	Market Research Analyst	4163	DIS	1	2	2
OCT 2005	Mediator	1121	IMS	1	3	2
OCT 2005	Medical Secretary	1243	SOd	12	2	3
OCT 2005	Oceanographer	2113	IOD	17	3	2
OCT 2005	Paralegal	4211.1	MSI	13	3	2
OCT 2005	Pulpmill Operator	9432	OMi	4	4	3
OCT 2005	Receptionist	1414.1	SMd	1	4	2
OCT 2005	Shipper and Receiver	1471	MOd	1	3	4
OCT 2005	Unit Clerk	1243	SOd	4	2	3
OCT 2005	Word Processing Operator	1411	OMi	4	4	2
OCT 2005	Flight Service Specialist	2272.3	OIM	4	3	2
OCT 2005	Meteorologist	2114	IOD	15	3	2
OCT 2005	Judicial Clerk	4211.1	MSI	4	3	2
OCT 2005	Marketing Manager	0611.2	DSI	13	3	2
NOV 2005	Accountant	1111.2	MID	15	3	2
NOV 2005	Actuary	2161.3	IMD	15	3	2
NOV 2005	Career Development Professional	4213	SMI	1	3	2
NOV 2005	Child and Youth Care Worker	4212	SMi	12	3	4
NOV 2005	Collection Agent	1435	MIs	4	3	2
NOV 2005	College, Technical or Vocational Instructor	4131	IDS	13	3	2
NOV 2005	Early Childhood Educator	4214.1	SMd	12	3	4
NOV 2005	Economist	4162	IMD	17	3	2
NOV 2005	Embalmer	6272.2	MOd	12	4	4
NOV 2005	English as a Second Language Teacher - Adults	4131	IDS	1	3	2
NOV 2005	Financial Analyst	1112.1	MId	15	3	2
NOV 2005	Funeral Attendant	6683.3	OMs	1	4	4
NOV 2005	Funeral Director	6272.1	DSM	12	4	4
NOV 2005	Geneticist	2121.2	IOD	17	3	2
NOV 2005	Insurance Adjuster	1233.1	MSd	4	3	2
NOV 2005	Lawyer	4112	MID	17	3	2
NOV 2005	Letter Carrier	1462	Mos	1	4	4
NOV 2005	Medical Transcriptionist	1244.2	MOi	12	3	2
NOV 2005	Postal/Wicket Clerk	1461.1	Mis	1	4	4
NOV 2005	Sociologist	4169.8	IDM	17	3	2
NOV 2005	Telemarketer	6623.4	Msd	1	4	2
NOV 2005	University Professor	4121	IDS	19	3	2
NOV 2005	Utility Clerk	1453.2	MSi	4	3	2
NOV 2005	Insurance Agent/Broker	6231	MSd	1	3	2
NOV 2005	Insurance Underwriter	1234	MSd	1	3	2
NOV 2005	Management Consultant	1122.1	IDS	17	2	2
NOV 2005	Credit/Loans Manager	0122.2	DMS	1	3	2
NOV 2005	Internal Auditor	1111.1	Mid	15	3	2
NOV 2005	Investment Advisor	1113.1	ISM	13	3	2
NOV 2005	Call Centre Agent	1453.2	MSi	1	3	2
NOV 2005	Private Trainer/Facilitator	1121	IMS	1	3	2
NOV 2005	Anthropologist	4169.1	IDM	15	3	2
NOV 2005	Archaeologist	4169.2	IDM	15	3	3
NOV 2005	Historian	4169.4	IDM	17	3	2
NOV 2005	Mail Sorter	1461.2	Mio	1	4	4
NOV 2005	Mathematician	2161.1	IMD	15	3	2
NOV 2005	Linguist	4169.5	IDM	15	3	2
DEC 2005	Addictions Counsellor	4153	SId	13	3	2
DEC 2005	Assessor	1235.1	Mds	13	4	2
DEC 2005	Binding and Finishing Machine Operators	9473.1	OMi	1	4	4
DEC 2005	Binding and Finishing Machine Operators	9473.2	OMi	1	4	4
DEC 2005	Building Superintendent	6663	MOI	1	4	4

Production Date	Occupational Profile Title	NOC Number	Interest Code	Education Level	Outlook Level	Lifting Level
DEC 2005	Demographer	2161.2	IMD	17	3	2
DEC 2005	Digital Printing Machine Operator	9471	MOI	1	4	4
DEC 2005	Family/Marriage Counsellor	4153	SId	17	3	2
DEC 2005	Librarian	5111	MSd	17	4	2
DEC 2005	Library Clerk	1451	MSo	4	3	3
DEC 2005	Physicist	2111.1	IOD	15	3	2
DEC 2005	Printing Press Operator	7381	MOd	4	4	4
DEC 2005	Real Estate Agent	6232	SMd	4	3	2
DEC 2005	Sawmill Machine Operator	9431	OMi	1	4	4
DEC 2005	Social Worker	4152	SID	13	3	2
DEC 2005	Statistician	2161.2	IMD	15	3	2
DEC 2005	Banking/Investment Manager	0122.1	DMs	13	3	2
DEC 2005	Pre-Press Technician	9472.5	OMI	4	3	2
DEC 2005	Public Relations Representative	5124	IMS	13	3	2
DEC 2005	Archivist	5113	MIS	17	4	2
DEC 2005	Library Technician	5211.1	SMi	13	4	3
JAN 2006	Conservation Officer	2224	DMS	15	4	3
JAN 2006	Educational Assistant	6472	SMi	12	3	3
JAN 2006	Educational Counsellor	4143	SId	17	3	2
JAN 2006	Forest Technician	2223	DMI	12	3	3
JAN 2006	Human Ecologist	4164.2	IDS	15	4	2
JAN 2006	Operations Manager	0911	DIM	1	3	2
JAN 2006	Operations Research Analyst	2161.2	IMD	15	3	2
JAN 2006	Political Scientist	4169.6	IDM	17	3	2
JAN 2006	Property Manager	1224	MDs	4	3	2
JAN 2006	Ergonomist	4161.1	IDM	15	3	2
JAN 2006	Forester	2122	ISD	15	3	2
JAN 2006	Career and Technology Studies Teacher	4141	SID	15	3	2
JAN 2006	Secondary School Teacher	4141	SID	15	3	2
JAN 2006	Fish and Wildlife Officer	2224	DMS	14	4	3
JAN 2006	Astronomer	2111.2	IOD	17	3	2
JAN 2006	Real Estate Appraiser	1235.3	Mds	1	4	2
JAN 2006	Elementary School Teacher	4142	SID	15	3	2
JAN 2006	Forest Technologist	2223	DMI	13	3	2
JAN 2006	Logging/Forestry Equipment Operators	8241.1	Omi	1	4	3
JAN 2006	Park Warden	2224	DMS	15	4	4
JAN 2006	Special Needs Teacher	4142	SID	15	3	2
FEB 2006	Heavy Equipment Technician	7312	OMI	9	3	4
FEB 2006	Heavy Equipment Technician	7321.3	OIM	9	3	4
FEB 2006	Auto Body Technician	7322	OMi	6	4	4
FEB 2006	Agricultural Equipment Technician	7312	OMI	9	3	4
FEB 2006	Appliance Service Technician	7332.1	OMi	6	3	4
FEB 2006	Automotive Service Technician	7321.1	OIM	6	3	4
FEB 2006	Baker	6252	MOd	5	4	4
FEB 2006	Boilermaker	7262	OMI	7	2	4
FEB 2006	Bricklayer	7281	OMI	5	3	4
FEB 2006	Cabinetmaker	7272	OMI	7	3	4
FEB 2006	Carpenter	7271	OMI	5	2	4
FEB 2006	Communication Technician	7246	OIM	8	4	4
FEB 2006	Concrete Finisher	7282	OMi	5	3	4
FEB 2006	Construction Craft Labourer	7611	MOi	11	3	4
FEB 2006	Cook	6242	MOd	5	3	4
FEB 2006	Electrical Motor Systems Technician	7333	OMI	9	3	4
FEB 2006	Electrician	7241	Oim	8	2	4
FEB 2006	Electrician	7242	Oim	8	2	4
FEB 2006	Electronic Technician	2242	OIM	8	3	4
FEB 2006	Elevator Constructor	7318	OMI	8	3	4
FEB 2006	Floorcovering Installer	7295	MOi	5	3	4

Production Date	Occupational Profile Title	NOC Number	Interest Code	Education Level	Outlook Level	Lifting Level
FEB 2006	Gas Utility Operator	7442.2	MOi	10	4	4
FEB 2006	Gasfitter	7253	OMi	5	3	5
FEB 2006	Glazier	7292	MOI	5	3	5
FEB 2006	Hairstylist	6271.1	IOS	6	4	2
FEB 2006	Instrument Technician	2243	OIM	9	2	4
FEB 2006	Insulator	7293	MOi	5	2	4
FEB 2006	Ironworker	7264	OMI	6	2	4
FEB 2006	Landscape Gardener	2225.5	OMD	5	3	5
FEB 2006	Lather-Interior Systems Mechanic	7284.3	MOi	5	3	4
FEB 2006	Locksmith	7383.2	OMi	6	4	3
FEB 2006	Machinist	7231.1	OIM	7	2	4
FEB 2006	Millwright	7311	OIM	7	3	4
FEB 2006	Motorcycle Mechanic	7334	OMi	5	3	4
FEB 2006	Outdoor Power Equipment Technician	7335	OMi	9	3	5
FEB 2006	Painter and Decorator	7294	MOi	5	3	4
FEB 2006	Parts Technician	1472	MOS	6	3	3
FEB 2006	Plumber	7251	Oim	8	2	5
FEB 2006	Power Lineman	7244	Oim	9	3	4
FEB 2006	Power System Electrician	7243	Oim	9	2	3
FEB 2006	Recreation Vehicle Service Technician	7383.3	OIM	6	4	5
FEB 2006	Refrigeration and Air Conditioning Mechanic	7313	OMI	8	3	4
FEB 2006	Roofer	7291.1	MOi	5	3	4
FEB 2006	Sawfiler	7383.5	OMi	6	4	5
FEB 2006	Sheet Metal Worker	7261	OMI	9	3	4
FEB 2006	Sprinkler Systems Installer	7252.2	Oim	6	2	4
FEB 2006	Steamfitter-Pipefitter	7252.1	Oim	6	2	5
FEB 2006	Steel Detailer	2253.1	MIO	10	3	2
FEB 2006	Steel Detailer	2253.2	MIO	10	3	2
FEB 2006	Structural Steel and Plate Fitter	7263	OMI	5	2	4
FEB 2006	Tilesetter	7283	OMI	5	3	5
FEB 2006	Tool and Die Maker	7232.1	OIM	7	3	4
FEB 2006	Transport Refrigeration Technician	7313	OMI	9	3	4
FEB 2006	Warehousing Professionals	7452.2	OMi	10	3	4
FEB 2006	Water Well Driller	7373	OMi	5	2	5
FEB 2006	Welder	7265.1	OMI	5	2	1
FEB 2006	Crane and Hoisting Equipment Operator	7371	OMi	6	2	5

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F. Definitions of *Employment Outlook, Location, Employment Turnover, Occupational Growth*, and *Size of Occupation* as used in the Occupational Profiles

February 14, 2006

Employment Outlook

The number of job openings in a particular occupation will depend on:

- time of year (for seasonal jobs)
- trends and **events** affecting overall employment
- location in Alberta
- employment turnover (work opportunities generated by people leaving existing positions)
- occupational growth (work opportunities resulting from the creation of new positions that never existed before)
- size of the occupation.

For the 2005 to 2010 forecast:

- **below average** occupation growth is less than 1.5 per cent a year
- **average** occupation growth is 1.5 to 2.5 per cent a year
- **above average** occupation growth is over 2.5 per cent a year

Location

The employment outlook in an occupation may vary from one location to another in Alberta. For example, the employment outlook may be different in a rural or urban community, or in a prairie or forested region of the province. It is a good idea to discuss your career plans with people who are knowledgeable about the occupations that interest you and the **local** employment outlook for those occupations.

Employment Turnover

Employment turnover refers to job vacancies created by people leaving existing positions. For example, people may quit because they have found other jobs, been promoted or decided to retire.

A significant number of job openings are created by employment turnover. In some occupations, more job openings are created by employment turnover than by occupational growth.

Occupational Growth

Occupational growth refers to the creation of **new** positions that never existed before. The occupational growth rate is the rate at which the number of people employed in an occupation is expected to grow each year. For example, if there are 1,000 people currently employed in an occupation that is growing at an average rate (1.5 to 2.5 per cent), there probably will be 15 to 25 new jobs created each year.

The occupational growth rates in Alberta occupational profiles are based on the Alberta Modified COPS Outlook for the period from 2005 to 2010 in Alberta (COPS stands for Canadian Occupational Projection System). Growth rates are **averages** of **expected** annual growth rates and therefore do not reflect changes from year to year over the forecast period.

Projections are based on federal government data about occupational groups defined at the four-digit level in the National Occupational Classification (NOC) system. When an occupation described in a profile is one of several occupations in an occupational group, it is important to **consider how demand for other types of work in the group may influence a projection.**

NOC occupational groups often include several related occupations. For example, the 4212: Community and Social Services Workers occupational group includes a number of occupations, six of which are described in separate Alberta occupational profiles:

- Child and Youth Care Worker
- Community Health Representative
- Life Skills Coach
- Mental Health Worker
- Rehabilitation Practitioner
- Volunteer Manager.

The same occupational growth rate is reported in all six profiles because the Alberta Modified COPS Outlook data is based on NOC groups at the four-digit level.

If some occupations are **growing significantly faster or slower** than other occupations in a group, the **rate for the whole group** may be affected.

For example, if most people in the occupational group are employed in occupations that are growing at an above average rate, the occupational growth projection for the group as a whole will probably be above average. If some are employed in occupations that are growing at an above average rate but most are employed in occupations growing at an average rate and/or some are employed in occupations growing at a below average rate, the occupational growth

projection for the group as a whole will probably be average. Likewise, occupational groups forecasted to grow at a below average rate may include some occupations that are in decline and others that are growing at an average rate.

Size of the Occupation

High employment turnover or occupational growth does not necessarily mean that there will be many job openings in an occupation. Likewise, average or below average employment turnover or occupational growth does not necessarily mean that there will be only a few job openings in an occupation. It depends on the size of the occupation.

Examples:

Number of People employed in the occupation		Occupational growth rate	Number of new positions created each year
100	x	over 2.5 per cent (**above** average)	= more than 2
1,000	x	1.5 to 2.5 per cent (average)	= 15 to 25
10,000	x	less than 1.5 per cent (**below** average)	= fewer than 150

OCC info Alberta Occupational Profiles

Alberta Human Resources and Employment

Aboriginal Liaison

Produced MARCH 2005

Aboriginal liaisons help build and maintain positive and effective relationships between Aboriginal and non-Aboriginal people who work for or are served by their employers.

NOC Number(s): 1221
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **M D S**

Duties

Aboriginal liaisons are employed by public and private sector organizations. In general, they:

- bring together representatives of the Aboriginal community, the employing organization, government agencies and unions
- promote cross-cultural understanding and facilitate communication between people of Aboriginal and non-Aboriginal origin
- advise others in their organizations regarding Aboriginal issues, cultures, trends and demographics
- recommend ways to establish and maintain good working relationships between Aboriginal and non-Aboriginal employees, clients or customers
- work co-operatively with other community agencies to promote awareness of Aboriginal issues and support Aboriginal employment and career development.

Depending on the nature of the employing organization, Aboriginal liaisons may:

- promote their organizations' services and policies in the Aboriginal community
- promote their organization as a potential employer
- facilitate access to their organizations' services
- educate others in their organizations about discrimination
- provide advice regarding effective intervention and prevention strategies, and help implement strategies
- identify appropriate resources for use with Aboriginal clients or customers
- promote the integration of Aboriginal content in programs and resources
- assist in the development and delivery of related programs and support services.

Working Conditions

Aboriginal liaisons usually work standard weekday office hours but may be required to attend evening or weekend meetings. They spend much of their time away from their offices delivering programs, acting as a community resource and building community relationships. A considerable amount of travel may be required.

Personal Characteristics

Aboriginal liaisons need the following characteristics:

- excellent communication skills, in person and in writing
- the ability to work effectively as part of a team
- the ability to consistently project a positive, professional image, both on and off the job
- the ability to maintain a balanced perspective
- excellent organizational and time-management skills
- an interest in facilitating individual and organizational growth.

They should enjoy co-ordinating programs and services, and working with people from a wide variety of backgrounds (e.g. Aboriginal community leaders, government representatives, managers at all levels of the organization).

Educational Requirements

Aboriginal liaisons need a combination of related education and experience. They must be:

- able to write concise reports and facilitate communication and group learning
- knowledgeable about local Aboriginal history, cultures and issues
- knowledgeable about the field in which they work (e.g. business administration, oil and gas exploration or extraction, health care)
- knowledgeable about their employer's organizational structure, culture and services/products.

Some employers require applicants to have a high school diploma or three to five years of related experience. Other employers require applicants to have a post-secondary diploma or degree in a field related to the organization's business (e.g. marketing, social services, policing, education, banking). A cost-conscious attitude and computer literacy are definite assets. In particular, Aboriginal liaisons should be able to use presentation software and related technology effectively.

Job applicants may be expected to provide references from respected members of the Aboriginal community.

Employment and Advancement

Aboriginal liaisons are employed by large organizations that are currently dominated by people of non-Aboriginal origin (e.g. school authorities, post-secondary institutions, police forces, regional health authorities, government departments, banks and other large corporations).

This is a growing but relatively small occupation so there are a limited number of new positions created each year in Alberta.

Salary

(section revised SEPTEMBER 2005)

Salaries for Aboriginal liaisons vary considerably from one position to another, depending on the size and nature of the organization, the responsibilities of the position, and the qualifications required. Aboriginal liaisons who have professional qualifications earn salaries comparable to their professional counterparts.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Administrative Officers occupational group working part-time or full-time earned from **$11,900 to $145,000 a year.** The average salary was **$45,100 a year.**

Other Sources of Information

Aboriginal Affairs and Northern Development (AAND) website: www.aand.gov.ab.ca

Aboriginal Human Resources Development Council of Canada (AHRDCC) website: www.ahrdcc.com

Aboriginal Workforce Participation Initiative (AWPI) website: www.ainc-inac.gc.ca/ai/awpi/

Office of the Treaty Commissioner (OTC) website: www.otc.ca

Related Occupational Profiles

Community Health Representative
Human Ecologist
Mediator
Mental Health Worker
Public Relations Representative

Related High School Subjects

Communication Technology; Community Health; Enterprise and Innovation; Language Arts; Languages (other than English); Legal Studies; Management and Marketing; Physical Education; and Social Studies

Related Post-Secondary Fields of Study

Business, Management and Administrative Studies; Education and Library Studies; Human Ecology, Fashion and Food Sciences; Humanities and Languages; Social Sciences, Law and Religious Studies; and Social, Community and Protective Services

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

The information contained in this profile was current as of the dates shown. **Salaries, employment outlook** and **educational programs** may change. Please check the information before making any career decisions.

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Accommodation Manager

Produced MARCH 2003

Accommodation managers direct and control the operations of privately and publicly owned hotels, motels, campgrounds, trailer parks, camps, hostels and post-secondary institution residences.

NOC Number(s): 0632
Minimum Education: 2 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **D M S**

Duties

Accommodation managers are responsible for operating their establishments efficiently and economically, satisfying guests and handling any problems that may arise.

In smaller establishments, accommodation managers may have a limited staff and personally direct all aspects of the operation. Managers of small motels or hostels, for example, may perform the duties of a front desk clerk, as well as manage the operation.

In larger establishments such as luxury hotels, general managers may have several assistant managers or department heads. The general manager's responsibilities might include:

- establishing and controlling budgets and approving contracts
- strategic planning
- setting room rates
- approving expenditures
- staff training
- establishing standards of quality service
- marketing and public relations.

Department heads under the general manager would be responsible for day-to-day operations such as:

- accounting
- marketing and sales
- human resources
- front desk services
- food and beverage services
- housekeeping and maintenance
- security
- convention services and/or hotel entertainment services.

Working Conditions

Working conditions for accommodation managers are as varied as the establishments they operate. Most establishments are open 24 hours a day, seven days a week, and managers may work long, irregular hours in addition to always being on call for emergencies. Some managers live in their establishments and are constantly involved with operations. The work is sometimes hectic and stressful.

Personal Characteristics

Accommodation managers need the following characteristics:

- excellent communication skills, in writing and in person
- good general health, stamina and mental alertness to cope with the long, irregular hours of work
- the ability to get along with all kinds of people
- leadership and decision-making skills

- the ability to adapt to changing customer needs and the unexpected
- the ability to remain calm while under pressure.

They should enjoy being in charge, taking a methodical approach to their work, and negotiating with people.

Educational Requirements

(section revised AUGUST 2005)

Accommodation managers should be familiar with all areas of their establishment's operations. In particular, they need sound financial management skills, and a working knowledge of hospitality law and safety standards. Other required qualifications vary depending upon the type of accommodation. Managers of smaller commercial establishments such as motels, trailer parks and campgrounds may be entrepreneurs who have some hospitality-related work experience. Managers of specialized camps such as those for handicapped people may be required to have related post-secondary education.

The best background for hotel and motel managers is a combination of experience and education in hospitality management. It is still possible to work up from the bottom in hotel management, if on-the-job training is supplemented with further education. Some large hotels sponsor their own on-the-job management training programs. However, most employers look for job applicants who already have related post-secondary education such as **a business degree or a two year diploma in hospitality management**.

In Alberta, the following post-secondary institutions offer programs that are directly related to hotel management:

- The **Northern Alberta Institute of Technology** in Edmonton offers a one year certificate and a two year Hospitality Management diploma program. The minimum education requirement for both programs is Grade 11 including English and math.
- **Red Deer College** offers a two year Hospitality and Tourism diploma program with specializations in accounting and finance management, food and beverage management, and rooms and marketing management. The entrance requirement is a high school diploma or equivalent.
- **Robertson College** offers a 40-week International Hospitality and Hotel Management program. The entrance requirement is a high school diploma with a Grade 12 English.
- The **Southern Alberta Institute of Technology (SAIT)** in Calgary offers a Hotel and Restaurant Management diploma program. The entrance requirement is a high school diploma or equivalent with English 30 or 33, and Pure Math 30 or Applied Math 30 or Math 33.
- **Training Inc.**, a private vocational school in Lethbridge, offers a 12-week Hotel and Restaurant Operations program. Applicants must contact the school for entrance requirements.
- **Trend College**, a private vocational school in Edmonton, offers a 32-week Hotel and Tourism Management Studies program and a 50-week International Hotel and Tourism Management Studies program. Applicants must be at least 19 years of age, attend a personal interview and have the approval of the program co-ordinator, and have a high school diploma with English 30 or 33 (or equivalent) or be mature students who have specific course requirements.
- The **University of Calgary** offers a Bachelor of Hotel and Resort Management degree program that may also be taken as a co-op program. Applicants must be admitted to an approved two year diploma program such as the Hotel and Restaurant Management program at SAIT (see above) and achieve a minimum grade point average of 3.0/4 in the diploma program before they are admitted to the BHRM program. The University of Calgary also offers four year and five year co-op Bachelor of Commerce degree programs in Tourism and Hospitality Management. The entrance requirement for the B.Comm. program is a high school diploma with an average of at least 70 per cent in English 30, Math 30 or Pure Math 30, and three other appropriate subjects.

Post-secondary institutions throughout the province offer university transfer programs that allow students to apply up to two years of study toward university bachelor's degree programs. It is the student's responsibility to ensure that the courses they choose will be accepted for credit at the institution to which they wish to transfer.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

The **Alberta Tourism Education Council (ATEC)** offers one-day staff training seminars and two-day management seminars in service excellence which may be of benefit to accommodation managers.

Contact the **Alberta Hotel and Lodging Association** for information on a home/self study Certified Hotel Administrators certificate program offered by the **Educational Institute of the American Hotel and Lodging Association**, or contact the Educational Institute directly.

Employment and Advancement

(section revised JANUARY 2006)

Unless they already have considerable work experience in the field, new graduates of hospitality education programs usually start in junior positions such as hotel desk clerk.

Years of experience and in-house training are generally required to advance to hotel manager. A typical advancement path in a large hotel might be desk clerk, front office manager, rooms division manager, executive assistant manager and, finally, general manager. However, someone promoted to general manager from the rooms division would require food and beverage experience or they would require a knowledgeable food and beverage manager to assist them. Managers employed by chain hotels or motels may be transferred from one location to another as they are promoted.

In Alberta, most people employed as accommodation service managers work in the following industries:

- **Accommodation and Food Services**
- **Finance, Insurance and Real Estate.**

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 4,800 Albertans are employed in the Accommodation Service Managers occupational group which is expected to grow 1.1 to 2.1 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 50 to 110 **new** positions will be created each year **in addition** to job openings created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised SEPTEMBER 2005)

Salaries for accommodation managers vary widely, depending on the size and nature of the establishment and the manager's qualifications.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Accommodation Service Managers occupational group working part-time or full-time earn from **$16,700 to $134,000 a year.** The average salary was **$39,500 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Hotel and Lodging Association website: www.albertahotels.ab.ca

American Hotel and Lodging Association, Educational Institute website: www.ei-ahma.org

Related Occupational Profiles

Accountant
Banquet Manager
Executive Housekeeper
Health Service Administrator
Hotel and Motel Desk Clerk
Restaurant Manager

Related High School Subjects

Communication Technology; Enterprise and Innovation; Financial Management; Foods; Language Arts; Languages (other than English); Logistics; Mathematics; Physical Education; Social Studies; and Tourism Studies

Related Post-Secondary Fields of Study

Business, Management and Administrative Studies; Communications; and Personal and Food Services

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Accountant

Produced NOVEMBER 2005

Accountants provide financial reporting and consulting services for organizations and individuals.

NOC Number(s): 1111.2
Minimum Education: 4 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **M I D**

Duties

Accountants work in business and industrial organizations, educational institutions, government and private firms that offer accounting services to the public. Duties vary from one position to another but, in general, accountants:

- design and administer accounting and information systems that include records of assets, liabilities and business transactions
- prepare budgets, tax returns and financial statements
- analyze financial information to assist in planning financial management policies, business strategies and the control and use of business assets
- provide personal and corporate income tax and estate planning services
- provide internal and external auditing services (for more information, see the Internal Auditor occupational profile)
- make recommendations regarding solutions to business and financial problems
- provide support in litigation matters
- serve as bankruptcy trustees and business valuators.

Accountants may have one of three professional designations:

- Certified General Accountant (CGA)
- Certified Management Accountant (CMA)
- Chartered Accountant (CA)

Working Conditions

Accountants usually work in an office setting. Their hours of work vary depending on the organization and level of responsibility but overtime is often required at company budgeting time, month end or in late winter and early spring (when public accountants are busy with year end corporate work and personal income tax returns). Depending on the position, some travel may be required.

Personal Characteristics

Accountants need the following characteristics:

- good oral and written communication skills
- critical thinking, logical analysis and problem solving skills
- the ability to work alone and as part of a team
- high ethical standards.

They should enjoy:

- having clear rules and organized methods to guide their activities
- developing innovative solutions to problems
- directing the activities of others.

Educational Requirements

(section revised DECEMBER 2005)

Training to become an accountant involves a combination of related post-secondary education and practical experience. Specific requirements vary depending on the professional designation.

To be certified by the **Institute of Chartered Accountants of Alberta** (ICCA), Chartered Accountants must:

- have a university degree or an equivalent combination of education and experience
- be employed with a CA firm approved to train students
- enrol in and complete the Chartered Accountants School of Business (CASB) program which includes online facilitated learning modules and group interactive learning meetings with facilitators.

Overall, after allowing for study leaves, two to three years are generally required to complete the ICAA program. The final national exam is generally completed before experience requirements.

To be certified by the **Society of Management Accountants of Alberta**, Certified Management Accountants must:

- have a university degree with 18 prerequisite syllabus topics
- pass the national CMA entrance exam
- complete the two year Strategic Leadership Program while employed full time in a qualifying accounting-related management position.

To be certified by the **Certified General Accountants' Association of Alberta**, Certified General Accountants must:

- have a bachelor's degree. CGA has agreements with post-secondary institutions that allow students to concurrrently study for the CGA designation as well as earn a bachelor's degree.
- complete 18 courses. Individuals who have taken equivalent post-secondary education courses may be granted exemptions up to a maximum of 14 transfer credits. Courses may be taken prior to obtaining employment in the accounting field but the program is designed for people who are working full-time.
- a minimum of twenty four months of full-time practical experience in finance and accounting.

Prospective students are strongly advised to check specific requirements and course suitability with the appropriate professional association, institute or society before enroling in post-secondary program.

In Alberta, the following post-secondary institutions offer degree programs in accounting.

- **Athabasca University** offers a four year Bachelor of Commerce degree program with a major in accounting. Anyone 16 years of age or older may apply for this distance education program.
- **Grande Prairie Regional College** offers a Bachelor of Commerce program in conjunction with Athabasca University.
- **Grant MacEwan College** in Edmonton offers a Bachelor of Applied Business Administration - Accounting degree program. Applicants for this two year program must have an Alberta business administration diploma in accounting (or equivalent) including specified courses with a minimum grade point average (GPA) of 2.3 on a 4.0 scale .
- **Lakeland College** in Vermilion offers a Bachelor of Applied Financial Services degree program. Applicants for this two year program must have a recognized two year diploma in business administration.
- **Mount Royal College** in Calgary offers a four year Bachelor of Applied Accounting degree program. The entrance requirement is a high school diploma with a 60 per cent average in English Language Arts 30-1 (or English 30), Pure Math 30 and three other appropriate Grade 12 subjects.
- The **Northern Alberta Institute of Technology (NAIT)** in Edmonton offers a Bachelor of Applied Business Administration - Accounting degree program that includes two directed field study semesters in industry. Applicants for this four semester program must have a two year business diploma from an accredited institution with specified coursework and a minimum GPA of 2.3.
- The **Southern Alberta Institute of Technology (SAIT)** in Calgary offers a Bachelor of Applied Business Administration degree program. Applicants must have a two year business administration or accelerated accounting diploma, or equivalent, with specified coursework and a minimum GPA of 2.3.
- The **University of Alberta** in Edmonton offers four year and five year co-op Bachelor of Commerce degree programs with a specialization in accounting. Applicants must have completed one pre-professional year in a Bachelor of Arts or Bachelor of Science program. In general, the entrance requirement for these programs is a competitive average in English Language Arts 30-1 (or English 30) and four other appropriate 30 level subjects.
- The **University of Calgary** offers a four year Bachelor of Commerce degree and five year co-op degree programs with specializations in accounting. The entrance requirement is a high school diploma with a competitive average in English Language Arts 30-1 (or English 30), Pure Math 30 and three of the following: Math 31, Social Studies 30, Biology 30, Chemistry 30, Physics 30, Science 30, a language 30 other than English, one five credit Grade 12 subject.

- The **University of Lethbridge** offers a four year Bachelor of Management degree in accounting and five year combined degree programs. The entrance requirement is an average of 65 per cent in English Language Arts 30-1 (or English 30), three other approved 30 level subjects and a fifth approved Grade 12 subject, or an approved business administration/management diploma (for post-diploma admission).

CGA students can earn an Honours Bachelor of Commerce degree by distance education through Laurentian University.

The following post-secondary institutions offer two year Accounting or Business Administration diploma programs:

- **Athabasca University**
- **Bow Valley College** in Calgary
- **Grande Prairie Regional College**
- **Grant MacEwan College** in Edmonton
- **Keyano College** in Fort McMurray
- **Lakeland College** in Lloydminster and Vermilion
- **Lethbridge Community College**
- **Medicine Hat College** in Medicine Hat and Brooks
- **Mount Royal College** in Calgary
- **NAIT** in Edmonton and Fairview
- **Portage College** in Lac La Biche
- **Red Deer College**
- **SAIT** in Calgary

Admission requirements for these programs vary but generally include a high school diploma or equivalent with a minimum average in specified Grade 12 courses such as English Language Arts 30-1 or 30-2, and Pure or Applied Math 30.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

(section revised JANUARY 2006)

Accountants may offer services on a fee-for-service basis or be employed on a salaried basis. They often work for:

- businesses
- governments
- management consultant practices
- corporate and personal tax preparation offices
- banks
- manufacturing companies
- stock exchanges
- credit offices
- public accounting practices
- educational institutions.

Experienced individuals who have professional accounting designations may advance to management positions or teach at the post-secondary level. Those in public accounting firms can move through the ranks of senior staff to become managers and partners. In industry, they can become:

- controllers
- treasurers
- chief financial officers
- senior executives.

In government, accountants may be employed as:

- budget officers
- internal auditors
- accounting managers
- information systems managers
- senior managers/executives.

Accountants are part of the larger National Occupational Classification 1111: Financial Auditors and Accountants. In

Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Professional and Technical Services**
- **Oil and Gas Extraction**
- **Public Administration**
- **Finance, Insurance and Real Estate**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

About 26,400 Albertans are employed in the Financial Auditors and Accountants occupational group which is expected to grow 1.5 to 2.5 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 390 to 660 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since accountants form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for accountants.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Accountants occupational group working part-time or full-time earned from **$14,000 to $194,200 a year.** The average salary was **$50,600 a year.** Accountants who have professional designations generally earn significantly more.

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Certified General Accountants Association of Alberta website: www.cga-alberta.org

Institute of Chartered Accountants of Alberta website: www.icaa.ab.ca

Society of Management Accountants of Alberta website: www.cma-alberta.com

Related Occupational Profiles

Accommodation Manager
Accounting Technician
Economist
Internal Auditor
School Business Official
Systems Auditor

Related High School Subjects

Communication Technology; Enterprise and Innovation; Financial Management; Information Processing; Language Arts; Legal Studies; Management and Marketing; and Mathematics

Related Post-Secondary Fields of Study

Business, Management and Administrative Studies

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Accounting Technician

Produced OCTOBER 2005

Accounting technicians maintain systematic records of business transactions and verify and record those transactions. They use computers to calculate, prepare and process invoices, accounts payable and receivable, budget documents and other routine financial records.

NOC Number(s): 1231
Minimum Education: High school diploma
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **M D i**

Duties

In small organizations, accounting technicians may:

- perform computer data entry and analysis functions
- prepare, type and mail monthly customer statements
- take telephone orders
- make up cheques
- make bank deposits and reconcile records of bank transactions
- assist with accounts receivable and accounts payable records, ledgers and journals
- assist with payroll calculations
- perform other clerical duties.

In large organizations, these duties are often divided among several employees called payroll clerks or cost clerks, for example. In general, they:

- use various computer applications
- record daily transactions
- total accounts by machine
- compute charges
- prepare invoices and reports.

To perform these duties, accounting technicians need an understanding of business documents such as receipts, till tapes, purchase orders, credit slips, sales slips, banking statements, financial statements and invoices.

Working Conditions

Accounting technicians usually work regular weekday hours in a comfortable office environment. Overtime may be required during peak business periods and standard hours may be different in the service industry.

Personal Characteristics

Accounting technicians must be able to:

- communicate effectively in person and on paper
- work with numbers quickly and accurately
- concentrate for extended periods of time and pay close attention to detail but also switch back and forth between tasks
- follow verbal and written instructions
- analyze data
- keep employer information confidential
- work independently on routine tasks.

They should enjoy having clear rules and organized methods for their work, balancing financial records and business transactions, and operating computerized systems and office equipment.

Educational Requirements

(section revised DECEMBER 2005)

The specific educational requirements for accounting and bookkeeping positions vary greatly from one employer to another depending on the scope and responsibility of the position. Most companies use electronic bookkeeping operations and require their employees to have related training or experience. Up to two years of on-the-job training or a related post-secondary certificate or diploma may be required. Employers may prefer to hire job candidates who are working toward a professional accounting designation (see the Accountant occupational profile).

High school courses in the following subject areas are valuable when seeking employment in this field:

- English
- accounting procedures
- law (especially contract law and statutes)
- basic economics
- business mathematics
- office procedures and business machine operation
- computer applications including word processing, spreadsheet and accounting software.

Most employers prefer to hire job candidates who have taken related courses and programs from colleges, technical institutes or private vocational schools. In Alberta, a number of institutions offer accounting courses and programs:

- **Academy of Learning** in Airdrie, Calgary, Edmonton, High River, Lethbridge, Medicine Hat and Red Deer
- **Alberta Career Computer Center Inc.** in Edmonton
- **Athabasca University**
- **Bow Valley College** in Calgary
- **CDI College of Business, Technology and Healthcare** in Calgary and Edmonton
- **Campbell College Ltd.** in Edmonton
- **Grande Prairie Regional College**
- **Grant MacEwan College** in Edmonton
- **HCC Choice College** in Spruce Grove
- **Keyano College** in Fort McMurray
- **Lakeland College** in Lloydminster and Vermilion
- **Lethbridge Community College**
- **Mann Career Training Ltd.** in Spruce View
- **Medicine Hat College**
- **Mount Royal College** in Calgary
- **NorQuest College** in Edmonton
- **Northern Alberta Institute of Technology (NAIT)** in Edmonton and Fairview
- **Portage College** in Lac La Biche
- **Red Deer College**
- **Reeves College** in Lloydminster
- **Slate Training Centre** in Edmonton
- **Southern Alberta Institute of Technology (SAIT)** Continuing Education Division in Calgary
- **University of Alberta** Faculty of Extension in Edmonton
- **University of Calgary** Faculty of Continuing Education
- **University of Lethbridge.**

Prospective students should investigate the suitability and reputation of training programs with employers before enrolling in a program. Courses and programs vary considerably in content, length, admission requirements and cost. In general, a high school diploma or mature student status is required for admission. However, the entrance requirements for some programs include specific achievement and course requirements (e.g. at least 60 per cent in English Language Arts 30-1 or English 30 and Pure Math 30 or Math 30, or 65 per cent in ELA 30-2 or English 33 and Applied Math 30 or Math 33).

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

(section revised JANUARY 2006)

Accounting technicians are employed in organizations ranging from retail businesses and manufacturing firms to social service agencies that provide health, education or other social services. Some positions are part-time.

Advancement opportunities generally depend on the accounting technician's willingness to take further education. Some accounting technicians move into related data management positions.

Accounting technicians are part of the larger National Occupational Classification 1231: Bookkeepers. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Professional and Technical Services**
- **Construction**
- **Oil and Gas Extraction**
- **Retail Trade**
- **Transportation and Warehousing**
- **Repair, Maintenance, Personal and Other Services**
- **Finance, Insurance and Real Estate.**

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 19,500 Albertans are employed in the Bookkeepers occupational group which is expected to grow 2.0 to 3.0 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 390 to 590 new positions will be created each year in addition to job openings created by employment turnover. (**Note:** Since accounting technicians form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for accounting technicians.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Inexperienced accounting technicians may start at salaries not much higher than minimum wage. Starting salaries are higher for graduates of related post-secondary programs.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Bookkeepers occupational group working part-time or full-time earned from **$10,800 to $91,300 a year.** The average salary was **$32,400 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Related Occupational Profiles

Accountant
Administrative Assistant
Career and Technology Studies Teacher
Financial Planner
Internal Auditor

Related High School Subjects

Communication Technology; Enterprise and Innovation; Financial Management; Information Processing; Language Arts; Legal Studies; and Mathematics

Related Post-Secondary Fields of Study

Business, Management and Administrative Studies; and Clerical and Administrative Support

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Actor

Produced MAY 2003

Actors perform roles in dramatic productions on stage, television, radio and in the movies. They also perform in television and radio commercials, and work in media narration and voice-overs.

NOC Number(s): 5135.1
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **M I d**

Duties

Actors' duties vary depending on the requirements of the roles they play but, in general, they:

- spend a considerable amount of time building a network of contacts (agents, casting directors, producers) in the entertainment industry
- audition for roles
- spend hours researching, studying, rehearsing and learning lines and cues
- work closely with directors, other actors and, sometimes, playwrights to find the interpretation they think is most suited to the role
- learn special skills such as singing, dancing, gymastics, juggling or stage combat, as required
- work together with other actors in ensembles.

Actors may be invited by directors or playwrights to "workshop" new plays and collectives (a collective is an improvisational technique for developing scripts). In this script development process, actors may be asked to read a character's lines or stage all or part of the play to help directors or playwrights see the characters brought to life.

Actors spend considerable time researching their characters and learning scripts. Rehearsals vary in length depending on the medium in which the actor is working. Weekly television shows and commercials are usually filmed in a short period of time. Mini-series, specials and movies take much longer to film. Generally, small segments are filmed at one time and film editors later put scenes in order.

Stage actors have longer rehearsal periods than performers on radio and television. They must be ready for opening night and be able to duplicate their performances consistently throughout the length of the play's run. Plays or musicals often run for weeks or even years, although the casts may change.

Working Conditions

Actors often work long, irregular hours. Rehearsals may be held on holidays and weekends. Most actors in stage productions perform six evenings and one or two matinees on weekends. Their normal day off is Monday.

It is common for actors to travel to other cities to perform in plays or work on films, which may require the actor to be away from home for a few weeks or several months. Working on location may involve working in just about any type of environment imaginable (e.g. noisy factories, underground, severe rain or snow storms).

Personal Characteristics

Actors need the following characteristics:

- imagination and creativity
- a talent for creating roles
- the ability to persevere when looking for work
- patience
- stamina and vitality
- self-discipline and a commitment to continually develop and refine their skills
- the ability to learn quickly and adapt to directors' interpretations

- the ability to work with others in an ensemble

They should enjoy having variety and creativity in their work, as well as the recognition and freedom their work brings.

Educational Requirements

(section revised SEPTEMBER 2005)

To succeed in this highly competitive field, actors must be versatile. Acting, singing, movement and dance skills increase an actor's potential for success.

Most actors have **formal training in performing arts.** In Alberta, the following post-secondary institutions offer related programs:

- **Grant MacEwan College** in Edmonton offers a two year Theatre Arts diploma program. The entrance requirement is a high school diploma or equivalent.
- **Keyano College** in Fort McMurray offers a two year Drama diploma program. The entrance requirement is a high school diploma with English 30, 30-1, 30-2 or 33 or equivalent and an audition or interview.
- **Mount Royal College** in Calgary offers a two year Theatre Arts diploma program. The entrance requirement is a high school diploma or equivalent.
- **Red Deer College** offers a two year Theatre Studies diploma program with a specialization in acting. The entrance requirement for the acting specialization is a high school diploma with English 30 or equivalent and an audition. Red Deer College also offers a one year post-diploma Motion Picture Arts, Advanced Certificate program and a Bachelor of Applied Motion Picture Arts degree program with a specialization in acting. The entrance requirements for the advanced certificate and bachelor's degree programs are two years of a post-secondary Theatre Studies Program, or equivalent, with a grade point average of at least 2.0/4 and an audition.
- **Rocky Mountain College** in Calgary offers a two year Theatre Arts diploma program. The entrance requirement is four matriculation level courses including English with a minimum average of 65 per cent in the four courses.
- The **University of Alberta** in Edmonton offers Bachelor of Fine Arts (BFA) and BA degree programs in Drama. The entrance requirement for the BFA program is successful completion of the first year of an approved BA or equivalent program with a junior-level English course (courses in the Humanities, Social Sciences and Fine Arts are recommended). This year is later credited toward the BFA degree program. The entrance requirement for the BA program is a high school diploma or equivalent with an average of at least 65 per cent in English 30, a 30-level language other than English or Math 30 or Pure Math 30, and three other approved Grade 12 subjects (Social Studies 30 is recommended). The University of Alberta in Camrose offers a bachelor degree programs in drama. The University of Alberta also offers a four year BFA degree program in Technical Theatre.
- The **University of Calgary** offers a four year BFA degree program in Drama. The entrance requirement is a high school diploma or equivalent with an average of at least 72 per cent in English 30 and four of the following subjects: Social Studies 30, Pure Math 30, Applied Math 30, Math 31, Biology 30, Chemistry 30, Physics 30, Science 30, a 30-level language other than English, Drama 30, one five credit Grade 12 subject.
- The **University of Lethbridge** offers BA, BFA and combination degree programs in Dramatic Arts with a specialization in performance. The entrance requirement is an average of at least 65 per cent in English 30 or English Language Arts 30-1 and three other appropriate 30-level subjects, plus a fifth Grade 12 subject. Graduates of approved two year diploma programs may be eligible to enter the third year of the BFA program.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

The **Banff Centre for the Arts** offers workshops for professional performers both at the Apprentice and the Professional levels. A resume and a statement of learning objectives are required.

Actors also need experience performing. This is often acquired through appearing in amateur theatre and school productions or working with community theatre groups.

Since most actors are self-employed independent contractors, they are often involved in the negotiation of individual contracts and must operate as a small business. Many actors benefit from skills training in negotiation and business management.

Throughout their careers, professional actors continue to take speech and voice training, movement, stage combat or other specialized courses or lessons to maintain and refine their skills.

Employment and Advancement

(section revised JANUARY 2006)

Getting started as an actor requires spending time preparing monologues for general auditions, reading for parts and getting to know people (and thereby becoming known) in the industry. Established actors, especially in television and film, often have agents who represent them and arrange for auditions.

Stage actors look for work by auditioning for the artistic directors of professional theatre companies. Once a year, they hold open auditions to see as many new actors as possible. Larger theatres such as the Citadel Theatre in Edmonton and Theatre Calgary send directors across Canada to audition actors. Professional theatres in Canada are permitted to hire a certain percentage of non-professional actors. This is how many new performers are hired for their first part. Being in the right place at the right time and having the right look also play a role in getting a first part.

Auditioning for film and television usually involves meeting with producers or directors who may already have seen the actor's resume and photograph. Sometimes actors are called back two or three times to audition before a casting decision is made. Most film and television actors have agents to arrange auditions and negotiate contracts.

Professional actors in Canada usually belong to the **Canadian Actors' Equity Association** (for live performance) or the **Alliance of Cinema, Television and Radio Artists**. These unions set minimum fees and working standards. Actors must gain some experience performing in equity productions before they are eligible to join. It is possible to work as a professional actor without joining either union; however, most actors do belong to at least one.

Actors are part of the larger National Occupational Classification 5135: Actors and Comedians. In Alberta, over 75 per cent of people employed in this classification work in the **Information, Culture and Recreation** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Information, Culture and Recreation industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 900 Albertans are employed in the Actors and Comedians occupational group which is expected to grow 1.0 to 2.0 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover. (**Note**: Since actors form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for actors.)

Salary

An actor's life is rarely financially rewarding. Minimum wages are set by the unions and maximum wages are negotiated by the actor or the agent. However, many actors accept non-equity work or work in co-operative productions. Some actors generate their own work by producing fringe festival productions.

The average ACTRA rate for speaking roles in film or television productions ranges from **$350 to $525 per eight hour day**, depending on the role (**2002 figures**). These figures do not include compensation for use of the production which these performers are entitled to under the ACTRA contract. In terms of the ratio for time worked versus total earnings, commercial work generates the highest earning potential.

Many actors must supplement their income between performances by taking part-time jobs, often jobs unrelated to acting. Some actors also work as directors, acting and voice coaches, or college drama teachers.

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alliance of Cinema, Television and Radio Artists website: www.actra.ca

Canadian Actors' Equity Association website: www.caea.com

Cultural Human Resources Council website: www.culturalhrc.ca

Related Occupational Profiles

Announcer
Casting Director
Dancer
Model
Singer

Related High School Subjects

Cosmetology Studies; Enterprise and Innovation; Financial Management; Fine Arts (Drama); Language Arts; Physical Education; and Social Studies

Related Post-Secondary Fields of Study

Fine Arts and Performing Arts

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Actuary

Produced NOVEMBER 2005

Actuaries apply their knowledge of mathematics (particularly probability, statistics and risk theory) to financial problems involving future uncertainty. These uncertainties may be associated with life or property/casualty insurance, annuities, pension or other employee benefit plans.

NOC Number(s): 2161.3
Minimum Education: 4 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **I M D**

Duties

Much of life is uncertain. It involves risk such as risk of sickness, disability, unemployment, property damage/loss or dying unexpectedly. Although these risks are unpredictable for any one individual, actuaries can analyze statistics and calculate the probability of uncertain events occurring in the future among members of defined groups.

In **insurance companies**, actuaries are involved in almost every aspect of the business including:

- developing new products and services
- setting premiums
- managing investments
- marketing
- management and administration.

In other settings, actuaries may provide a wide variety of services. For example, they may:

- help employers, labour unions and trustees design and administer private pension plans and other employee benefit plans
- specialize in the probabilities of loss arising from events such as sickness, disability and casualties caused by fire, theft, windstorm or automobile accident
- appear as expert witnesses in court proceedings on issues such as lost future earnings
- help investment fund managers maximize their returns
- improve medical insurance plans by showing the long term savings possible through alternative treatments or the introduction of new drugs
- advise companies on how to set up trust funds to cover anticipated future expenses.

Working Conditions

Although actuaries work in offices with standard office hours, longer hours are sometimes required. Some travel may be required for business meetings and conferences.

Personal Characteristics

Actuaries need the following characteristics:

- an interest in mathematics
- practical business sense
- the creativity required to develop innovative solutions to problems
- effective communication skills
- the ability to work with a wide variety of people.

They should enjoy synthesizing information and solving problems, taking a methodical approach to their work, making decisions and consulting with people.

Educational Requirements

Actuaries need **related education and experience** and must pass a series of qualifying exams. A solid background in high school math, particularly algebra, calculus and finite math, is important.

While it is not a formal requirement, most actuaries have a university degree and have taken courses in many or all of the following areas:

- math
- statistics
- economics
- commerce
- accounting
- business administration
- computer science
- marketing.

Some Canadian universities offer courses in actuarial science that help students prepare for professional exams. In Alberta, the University of Alberta in Edmonton and the University of Calgary offer actuarial science courses.

- The **University of Alberta** in Edmonton offers a four year B.Sc. degree program in actuarial science with a business minor, and a B.Sc. degree program in mathematical finance. Students may apply for admission to the actuarial science program after completing at least one year of university studies. The entrance requirement for admission to the Faculty of Science is a competitive average in English Language Arts 30-1 or English 30, Pure Math 30 or Math 30, Math 31, a 30 level science (Physics 30, Chemistry 30 or Biology 30) and one other appropriate 30 level subject.
- The **University of Calgary** offers a Bachelor of Science (B.Sc.) degree program with a major in actuarial science. The program normally takes four years to complete but is also available as a five year co-operative education program in which classroom study is integrated with work experience. The entrance requirement is a high school diploma with an average of at least 70 per cent in English Language Arts 30-1 or English 30, Pure Math 30 or Math 30, and three other 30 level subjects selected from an approved list. The University of Calgary also offers a five year combined Bachelor of Commerce (B.Com.) and B.Sc. degree program in actuarial science.

Post-secondary institutions throughout the province offer university transfer programs that allow students to apply up to two years of study toward university bachelor's degree programs. It is the student's responsibility to ensure that the courses they choose to take will be accepted for credit at the insitution to which they wish to transfer.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Other Requirements

Professional exams leading to the designation Fellow of the Society of Actuaries are jointly sponsored by the Canadian Institute of Actuaries and the Society of Actuaries. Exams leading to the designation Fellow of the Casualty Actuarial Society are offered by the Casualty Actuarial Society in consultation with the Canadian Institute of Actuaries. One of these designations is required for the designation Fellow, Canadian Institute of Actuaries. There are two levels of exams. Most candidates complete the first level of exams within three to five years of graduating from university. It generally takes five to ten years to complete all of the exams to attain Fellowship.

Students are encouraged to complete economics, corporate finance and applied statistics course requirements and write some first level exams while still at university. This enables them to find employment in the actuarial field. Although most employers give actuarial students some time to study during working hours, students generally have to study on their own time as well.

Employment and Advancement

(section revised JANUARY 2006)

Actuaries may be employed by or work on a contract basis for:

- consulting firms
- life insurance companies
- property/casualty insurance companies
- reinsurance companies

- universities
- government departments
- large corporations.

There is an increasing demand for actuaries in non-traditional roles such as compensation consulting, workers' compensation, health care management, financial planning, investments, environmental liability, enterprise risk management and information systems.

Experienced actuaries may advance to senior management positions in insurance companies.

Actuaries are part of the larger National Occupational Classification 2161: Mathematicians, Statisticians and Actuaries. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Professional and Technical Services**
- **Public Administration**
- **Finance, Insurance and Real Estate**
- **Educational Services**
- **Food and Beverage Products Manufacturing**
- **Retail Trade**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 450 Albertans are employed in the Mathematicians, Statisticians and Actuaries occupational group which is expected to grow 1.5 to 2.5 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover. (**Note**: Since actuaries form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for actuaries.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Salaries vary depending on the actuary's qualifications, location and the type of employer. According to a **2000** salary survey conducted by the **Canadian Institute of Actuaries**, salaries for:

- students who had successfully completed a number of qualifying exams ranged from **$48,000 to $55,000 a year**
- newly-qualified Fellows ranged from **$65,000 to $89,000 a year**
- Fellows with ten or more years of experience ranged from **$104,000 to over $168,000 a year**.

In 2003, Albertans in the Mathematicians, Statisticians and Actuaries occupational group earned an average salary of **$58,800 a year** (2003 Alberta Wage and Salary Survey).

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Be An Actuary website: www.BeAnActuary.org

Canadian Institute of Actuaries website: www.actuaries.ca

Society of Actuaries website: www.soa.org

Casualty Actuarial Society website: www.casact.org

Related Occupational Profiles

Demographer
Insurance Underwriter
Mathematician
Operations Research Analyst
Statistician

Related High School Subjects

Communication Technology; Enterprise and Innovation; Financial Management; Information Processing; Language Arts; Management and Marketing; Mathematics; and Science

Related Post-Secondary Fields of Study

Business, Management and Administrative Studies; and Mathematics

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For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Acupuncturist

Produced MARCH 2005

Acupuncturists diagnose patients' diseases, physiological disorders and injuries according to traditional Chinese medical theories, and treat them by inserting acupuncture needles or by using other methods of stimulating different points on the body.

NOC Number(s): 3232.2
Minimum Education: 3 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **S I M**

Duties

Acupuncture, a healing art practiced in China for over two thousand years, has received attention and acceptance in Western cultures relatively recently. It is based on the premise that illness occurs when the flow of vital energy, Qi, is obstructed or out of balance. Stimulating certain points on the body can help correct this obstruction or imbalance and, consequently, relieve pain and restore health.

Acupuncturists use unique techniques and diagnostic methods to determine patterns of imbalance or disharmony. In a typical assessment session, an acupuncturist assesses a patient's vitality and general physical, mental and emotional condition by:

- examining the patient's tongue and general appearance
- listening to the patient's voice, breathing and abdominal sounds
- noting body odours
- checking pulses at several points on each wrist and other specific points
- asking questions about body functions such as digestion, sleep patterns and eating habits.

Through patients' physicians, acupuncturists also may arrange for additional tests, analyses and x-rays to assist in diagnosing problems.

Once they have made a diagnosis, acupuncturists determine what body points should be stimulated, how and for how long. Acupuncturists may also recommend herbal supplements, exercises or dietary changes.

Working Conditions

Acupuncturists work in offices and treatment clinics, and may spend a great deal of their time on their feet. For the convenience of their clients, they may work some evening or weekend hours.

Lifting up to 10 kilograms is routinely required. Occasionally, acupuncturists may be required to lift patients (e.g. from wheelchair to treatment table).

Personal Characteristics

Acupuncturists need the following characteristics:

- an ethical, responsible and compassionate attitude
- good communication skills
- maturity
- the ability to establish rapport with patients and gain their trust and confidence.

They should enjoy observing and interviewing people, performing tasks requiring precision (e.g. inserting acupuncture needles at precise points), and advising patients.

Educational Requirements

(section revised JULY 2005)

In general, applicants for registration as acupuncturists (see Other Requirements below) must satisfactorily complete an approved program of studies (or equivalent) and have practiced acupuncture for at least 500 hours within the previous two years.

In Alberta, the following institutions offer acupuncture training programs:

- the **Alberta College of Acupuncture and Traditional Chinese Medicine** in Calgary, offers a 108-week Acupuncture program. The entrance requirement is a high school diploma with 60 per cent or better in Grade 12 English, math and science. Applicants must be at least eighteen years of age, out of school for two years or have successfully completed one year of post-secondary education or equivalent training. An interview is required.
- the **Calgary College of Traditional Chinese Medicine and Acupuncture** in Calgary offers a 102-week Acupuncture program. The entrance requirement is a high school diploma with at least 60 per cent in a Grade 12 English, math and science or equivalent.
- the **Canadian Institute of Traditional Chinese Medicine** in Calgary offers a three year diploma program that includes theory, clinical observation and practice. The entrance requirement is two years of related post-secondary education or an equivalent combination of education and experience.
- **Grant MacEwan College** in Edmonton offers a three year diploma program. The entrance requirement is a high school diploma with English 30, Biology 30, Chemistry 30 and two years of post secondary education, preferably in health sciences.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Other Requirements

Under Alberta's Health Disciplines Act and Acupuncture Regulation, you must be registered by the Acupuncture Health Disciplines Committee to call yourself an Acupuncturist. Registered members provide services listed in the Regulation.

Employment and Advancement

(section revised JANUARY 2006)

Most acupuncturists work in private practice, alone or in partnership with other health care professionals such as family physicians or chiropractors. Advancement in this occupation generally takes the form of building a larger, more prosperous practice.

Acupuncturists are part of the larger National Occupational Classification 3232: Midwives and Practitioners of Natural Healing. In Alberta, most people employed in this classification work in the **Health Care and Social Assistance** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Health Care and Social Assistance industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

About 500 Albertans are employed in the Midwives and Practitioners of Natural Healing occupational group which is expected to grow 1.4 to 2.4 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover. (**Note**: Since acupuncturists form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for acupuncturists.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Incomes in this occupation vary considerably, ranging up to and over **$120,000 a year (2005 estimate).**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Related Occupational Profiles

Chiropractor
Herbalist
Homeopath
Massage Therapist
Midwife
Naturopathic Doctor
Reflexologist

Related High School Subjects

Community Health; Financial Management; Language Arts; Physical Education; and Science (Biology; and Chemistry)

Related Post-Secondary Fields of Study

Health Care and Medical Sciences; and Sciences

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Addictions Counsellor

Produced DECEMBER 2005

Addictions counsellors help individuals, families and communities identify and deal with addictions through treatment and prevention programs.

NOC Number(s): 4153
Minimum Education: 2 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: S I d

Duties

In general, addictions counsellors:

- work with clients from diverse cultures and lifestyles who have eating disorders or are addicted to alcohol, drugs, gambling, sex or tobacco
- assess client strengths, problem areas, severity of dependence and readiness to change
- develop patient treatment plans that are based on research, clinical experience and client history
- provide information about addiction issues and about available services and programs and make appropriate referrals where necessary
- conduct information sessions and therapy groups as required
- counsel affected individuals and family members through all stages of recovery using appropriate intervention strategies and treatment approaches
- review, evaluate and document client progress
- provide aftercare and follow-up as appropriate
- develop public education, prevention and health promotion programs
- work with organizations, institutions and communities to develop, implement and evaluate health and wellness programs.

Working Conditions

Addictions counsellors may work in residential treatment centres, detox centres, group homes, over night shelters, out patient centres, schools or community based agencies. Depending on the agency, they may work standard weekday office hours or work shifts that include evenings and weekends. Some travel may be required.

This work can be both emotionally rewarding and emotionally draining.

Personal Characteristics

Addictions counsellors need the following personal characteristics:

- emotional maturity and a balanced, healthy lifestyle
- patience
- tolerance for beliefs and values that not their own
- excellent communication and presentation skills
- the ability to manage time effectively.

They should enjoy working with people, synthesizing information to find innovative solutions to problems, and helping others.

Educational Requirements

A **related university degree** is the **preferred** credential for addictions counsellors. Depending on the place of employment, a related two year post-secondary diploma plus related work experience or training also may be acceptable.

Post-secondary institutions throughout Alberta offer related degree programs. For more information, see the Psychologist and Social Worker occupational profiles. The following institutions offer addictions counselling programs:

- **Medicine Hat College** offers a two-and-a-half-year Addictions Studies diploma program that includes a practicum. The entrance requirement is a high school diploma with English Language Arts 30-1 or English 30, Biology 30 or Chemistry 30, and three other approved 30 level subjects (Pure Math 30 or Math 30 recommended). Graduates may apply for admission to a related post-diploma degree program.
- **Mount Royal College** in Calgary offers a 120 hour, part-time Addiction Studies program through the Faculty of Continuing Education and Extension. Supported by **AADAC** (Alberta Alcohol and Drug Abuse Commission), this program gives human service practitioners the opportunity to learn about addictions.
- The **University of Lethbridge** offers a four year program leading to a Bachelor of Health Sciences (B.H.Sc.) degree. The entrance requirement is a high school diploma with a 65 per cent average in English Language Arts 30-1 or English 30, Biology 30 or Chemistry 30, and three other approved 30 level subjects (Pure Math 30 or Math 30 recommended). An approved diploma in Addictions Counselling is required for post-diploma admission.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

(section revised JANUARY 2006)

Addictions counsellors are employed by agencies that offer prevention, health promotion, early intervention or treatment programs. They may work with dependent clients or in addiction programs, women's shelters, the criminal justice system, medical/health services, schools or community programs.

Advancement opportunities depend on the counsellor's qualifications and the size and nature of the organization.

Addictions counsellors are part of the larger National Occupational Classification 4153: Family, Marriage and Other Related Counsellors. In Alberta, over 75 per cent of people employed in this classification work in the **Health Care and Social Assistance** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Health Care and Social Assistance industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 3,800 Albertans are employed in the Family, Marriage and Other Related Counsellors occupational group which is expected to grow 1.9 to 2.9 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 70 to 120 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since addictions counsellors form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for addictions counsellors.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Family, Marriage and Other Related Counsellors occupational group working part-time or full-time earned from **$16,600 to $105,300 a year.** The average salary was **$30,700 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Alcohol and Drug Abuse Commission (AADAC) website: www.aadac.com

Related Occupational Profiles

Child and Youth Care Worker
Community Health Representative
Correctional Services Worker
Educational Counsellor
Family/Marriage Counsellor
Human Ecologist
Life Skills Coach
Mental Health Worker
Parole/Probation Officer
Psychologist
Social Worker

Related High School Subjects

Community Health; Language Arts; and Science (Biology; and Chemistry)

Related Post-Secondary Fields of Study

Social Sciences, Law and Religious Studies; and Social, Community and Protective Services

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For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Administrative Assistant

Produced OCTOBER 2005

Administrative assistants perform administrative duties ranging from general office tasks to acting as special assistants in particular departments.

NOC Number(s): 1411
Minimum Education: 1 year post-secondary education/training
Employment Outlook: Employment turnover plus below average occupational growth in Alberta
Interests: **O M i**

Duties

Technology is constantly changing and so are administrative assistants' duties. However, in general, administrative assistants:

- use word processing, spreadsheet, database or presentation software to prepare invoices, reports, memos, letters, financial statements and other documents
- answer telephones, schedule meetings, manage executives' calendars, greet visitors, meet with clients, and handle business and administrative details
- prepare meeting agendas, attend meetings, and record and transcribe minutes
- open, sort and distribute correspondence (including faxes and electronic mail) and respond to routine inquiries
- draft correspondence and reports
- make travel arrangements, prepare expense reports, order and maintain office supplies
- develop or maintain a records management system including classifying and coding electronic and hardcopy files
- train staff members in computer applications and troubleshoot hardware and software problems
- research information on the Internet, prepare Intranet documents and assist in the maintenance of company websites
- handle basic bookkeeping duties such as accounts payable and receivable and the reconciliation of accounts
- operate office equipment such as fax machines, photocopiers, voice mail messaging systems and computer scanning equipment
- transcribe material from handwritten notes or electronic dictation
- edit or format documents for executives
- manage events (for more information, see the Special Event Co-ordinator profile).

Working Conditions

Administrative assistants work in office environments. They usually work standard office hours but overtime may be required to meet deadlines.

Personal Characteristics

Administrative assistants need the following characteristics:

- good oral and written communication skills
- good interpersonal skills
- good organizational and time management skills
- the ability to work independently or as part of a team.

They should enjoy working with people, using computer applications, and compiling and organizing information.

Educational Requirements

(section revised FEBRUARY 2006)

Most employers, particularly in specialized fields, require administrative assistants to have related post-secondary education and computer skills.

In Alberta, a number of colleges, technical institutes and private vocational schools offer post-secondary programs related to office administration:

- **3A Academy & Consulting Ltd.** in Lloydminster
- **Academy of Learning** in Airdrie, Calgary, Edmonton, High River, Lethbridge, Medicine Hat and Red Deer
- **Alberta Career Computer Centre** in Edmonton
- **Blue Quills First Nations College** in St. Paul
- **Bow Valley College** in Calgary
- **Campbell College Ltd.** in Edmonton
- **Careers in Transition** in Edmonton
- The **CDI College of Business, Technology and Healthcare** in Calgary and Edmonton
- **Columbia College** in Calgary
- **Grande Prairie Regional College**
- **Grant MacEwan College** in Edmonton
- **HCC Choice College** in Spruce Grove
- **Keyano College** in Fort McMurray
- **Lakeland College** in Vermilion
- **Lethbridge Community College**
- **Mayfair Business College** in Grande Prairie
- **Medicine Hat College**
- **Mount Royal College** in Calgary
- **NorQuest College** in Edmonton
- **Northern Alberta Institute of Technology** in Edmonton, Peace River and St. Albert
- **Northern Lakes College** in Athabasca, Grouard, High Prairie, Slave Lake, Valleyview and Wabasca
- **Olds College**
- **Portage College** in Lac La Biche
- **Prestwick College** in Calgary
- **Red Deer College**
- **Reeves College** in Calgary, Edmonton and Lloydminster
- **Slate Training Centre** in Edmonton
- **Southern Alberta Institute of Technology (SAIT)** in Calgary
- **Sprott-Shaw Community College** in Calgary and Edmonton
- **Training Inc.** in Lethbridge
- **Trend College** in Edmonton.

Prospective students should investigate the suitability and reputation of training programs with employers before enrolling in a program. Courses and programs vary considerably in content, length, admission requirements and cost. In general, a high school diploma or mature student status is required for admission but entrance requirements for some programs include specific courses such as English Language Arts 30-1 or 30-2 and Grade 11 math.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

(section revised JANUARY 2006)

Administrative assistants may be employed in any industry. Some are self-employed and work from home.

Experienced administrative assistants may advance from routine clerical tasks to a skilled specialty or to supervision of other office assistants.

Administrative assistants are part of the larger National Occupational Classification 1411: General Office Clerks. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Health Care and Social Assistance**

- **Public Administration**
- **Professional and Technical Services**
- **Finance, Insurance and Real Estate**
- **Management, Administrative and Other Support Services**
- **Educational Services**
- **Retail Trade**
- **Construction**
- **Transportation and Warehousing**
- **Wholesale Trade**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 16,000 Albertans are employed in the General Office Clerks occupational group which is expected to grow 0.2 to 1.2 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 30 to 200 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since administrative assistants form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for administrative assistants.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Salaries for administrative assistants vary depending on the responsibilities of the position and the qualifications of the worker.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the General Office Clerks occupational group working part-time or full-time earned from **$11,300 to $138,500 a year.** The average salary was **$34,400 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

International Association of Administrative Professionals website: www.iaap-hq.org

Related Occupational Profiles

Accounting Technician
Chiropractic Assistant
Health Information Management Professional
Legal Secretary
Medical Secretary
Receptionist
Unit Clerk
Word Processing Operator

Related High School Subjects

Communication Technology; Financial Management; Language Arts; Logistics; and Management and Marketing

Related Post-Secondary Fields of Study

Clerical and Administrative Support

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Advertising Account Executive

Produced FEBRUARY 2004

Advertising account executives co-ordinate the day to day activities involved in planning and implementing print and electronic media advertising campaigns.

NOC Number(s): 1122.2
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: **I S D**

Duties

Advertising account executives are the primary link between advertising agencies and their clients. Their duties and responsibilities vary depending on the agency and the type of account but, in general, they:

- familiarize themselves with client products, services, target markets, goals, competitors and preferred media
- consult with clients to establish advertising campaign objectives and budgets, and build strong relationships with clients
- communicate client objectives to production and creative personnel such as art directors, copywriters and researchers
- assist in the development of campaign strategies
- submit campaign ideas and cost estimates to clients for approval
- act as a liaison for the client, production team, creative group and agency business personnel
- track progess, keep everyone involved informed and perform the administrative tasks required to ensure that campaigns are successfully completed profitably.

Advertising account executives may also be expected to bring in new business for the agency.

Working Conditions

Advertising account executives usually work in office environments. Some travel may be required.

Dealing with difficult clients and working long, irregular hours to meet deadlines can be stressful.

Personal Characteristics

Advertising account exectuives need the following characteristics:

- energy, self-confidence, initiative and competitive spirit
- excellent oral and written communication skills, including the ability to make presentations under pressure
- the interpersonal skills required to build and maintain professional relationships with clients and coworkers
- imagination, creativity and flexibility
- an open-minded attitude
- exceptional organizational skills
- the ability to pay close attention to details
- integrity.

They should enjoy consulting with people and analysing client needs, and developing, implementing and evaluating advertising campaigns.

Educational Requirements

Advertising account executives are marketing consultants and communications experts. They need **computer skills and related experience as well as related post-secondary education** (e.g. a two year diploma in advertising or marketing, or a bachelor's degree in commerce/management/business administration, psychology or sociology).

Courses in marketing, market research, economics, statistics, accounting, the psychology of persuasion/perception and communication arts are recommended. Some employers require applicants for account executive positions to have a related bachelor's or master's degree (e.g. Master of Business Administration) or experience in a particular industry (e.g. retail, insurance, health care).

Continuing education programs are often offered on an as needed basis. For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Suitable business administration/commerce/management and liberal arts programs are offered by post-secondary institutions throughout Alberta. For information about marketing programs, see the Marketing Manager occupational profile.

Employment and Advancement

(section revised JANUARY 2006)

Advertising account executives are employed by advertising agencies and the advertising departments of large companies. Most agencies and head offices are located in large urban centres.

Account executives generally start their careers in junior positions and work their way up. Advancement usually takes the form of being assigned higher profile clients and bigger campaigns. In advertising agencies, successful account executives may advance to account manager/supervisor and account director positions.

Advertising account executives are part of the larger National Occupational Classification 1122: Professional Occupations in Business Services to Management. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Professional and Technical Services**
- **Oil and Gas Extraction**
- **Information, Culture and Recreation**
- **Finance, Insurance and Real Estate**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 10,250 Albertans are employed in the Professional Occupations in Business Services to Management occupational group which is expected to grow 2.8 to 3.8 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 280 to 390 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since advertising account executives form only a small part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for advertising account executives.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised SEPTEMBER 2005)

Advertising account executives may be paid a salary, work on an hourly rate and/or receive commissions.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Professional Occupations in Business Services to Management occupational group working part-time or full-time earned from **$11,500 to $179,800 a year.** The average salary was **$66,500 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

Institute of Communications and Advertising website: www.mybigfuture.com

Related Occupational Profiles

Advertising Copywriter
Management Consultant
Market Research Analyst
Marketing Manager
Public Relations Representative
Sales Representative (Wholesale, Nontechnical)

Related High School Subjects

Communication Technology; Enterprise and Innovation; Financial Management; Language Arts; Management and Marketing; and Social Studies

Related Post-Secondary Fields of Study

Business, Management and Administrative Studies; Communications; and Social Sciences, Law and Religious Studies

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For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Advertising Copywriter

Produced MAY 2005

Advertising copywriters write advertisements for print, outdoor and broadcast media, and write copy for Internet home pages and CD-ROM applications.

NOC Number(s): 5121.3
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **I M d**

Duties

Copywriters write advertisements to promote the sale of goods and services, and promote and maintain positive images of their client organizations.

- In **print media,** copywriters write advertisements for clients who buy advertising space in newspapers and magazines.
- In **outdoor media**, they write advertisements for clients who buy billboards, outdoor posters and bus boards.
- In **broadcast media**, copywriters write radio and television commercials and short announcements for customers who buy advertising time. They also may write scripts for corporate or professional videos.

In advertising agencies, copywriters may write for all of the above mediums. They may specialize in writing for local and regional companies, national corporations, government departments, retail outlets or not-for-profit organizations.

In addition to writing advertisements, promotional materials and merchandising materials, copywriters may write media releases, brochures, direct mail pieces or trade journal articles. These materials may appear in a variety of formats including Internet home pages. In general, however, advertising copywriters:

- consult with account executives or clients, or follow client instructions that specify the messages to be conveyed
- research the product or service they are writing about
- work in conjunction with others to develop effective ways of attracting the attention of the target audience and influencing consumer attitudes and buying habits (creative thinking is an important part of the job)
- sell their ideas to clients, supervisors and account executives
- take into account client needs and the requirements of the overall marketing plan for the product or service
- work closely with layout artists (graphic designers, commercial artists and photographers) to add visual impact
- edit and proofread ads for accuracy and for copy or photo co-ordination
- help with layout and production, sometimes assisting in the direction of television film shoots or radio commercials, or supervising photo sessions
- act as producers for TV shoots.

Most copywriters routinely work on several projects at the same time.

Working Conditions

Because advertising is an intensely competitive, fast-paced industry, copywriters must be able to deal with the pressure of having to work on several projects simultaneously and meet deadlines. Copywriters must manage their time and balance a need for quiet, creative thinking/writing time with the need to deal with many interruptions such as phone calls and meetings with clients and co-workers.

Copywriters usually keep regular office hours but meeting deadlines frequently involves working overtime.

Travel to "on location" photo shoots, radio and film productions is sometimes required.

Personal Characteristics

Copywriters need the following characteristics:

- excellent communication skills in person and in writing
- the ability to think creatively and generate an unending supply of fresh, exciting, new ideas
- an outgoing personality able to relate well to others (clients, co-workers, intended audiences) and sell ideas
- the ability to focus on their work in circumstances that are sometimes chaotic
- the ability to give and take constructive criticism
- time management and organizational skills (copywriters may have to generate five to 15 ads per day)
- the ability to work well under pressure
- an interest in advertising, sales and marketing, and in keeping up to date in their field.

They should enjoy synthesizing information and finding innovative solutions to problems, studying products and services, and persuading people.

Educational Requirements

The most important qualifications for advertising copywriters are:

- the ability to write in a variety of styles
- a solid grasp of the English language
- good research skills
- a willingness to edit their own work ruthlessly
- excellent word processing and proofreading skills.

Building a strong portfolio of written work is essential for finding employment in this field.

Most copywriters have some **post-secondary education related to communications, journalism, marketing or broadcasting.** Many have a Bachelor of Arts (BA) degree in English. Suitable post-secondary education programs are offered by post-secondary institutions located throughout Alberta. Continuing education programs are offered on an as needed basis.

In Alberta, the following post-secondary institutions offer programs with course content directly related to advertising:

- **Grant MacEwan College** offers a two year diploma program and a four year Bachelor of Applied Communication Studies in Professional Writing degree program. The entrance requirement is a high school diploma or equivalent with an average of at least 65 per cent in English Language Arts 30-1 (or English 30), a 30 level language other than English or Pure Math 30 (or Math 30 or equivalent), and three other courses chosen from specified lists of eligible courses.
- **Lethbridge Community College** offers a two year Communication Arts diploma program with a specialization in Advertising/Public Relations. The entrance requirement is an average of at least 60 per cent in English Language Arts 30-1 or 70 per cent in ELA 30-2 (or equivalent), and 60 per cent in Social Studies 30 (or equivalent). Applicants must write a 500 word composition.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

(section revised JANUARY 2006)

Advertising copywriters are employed by:

- advertising agencies
- newspaper and magazine publishers
- radio and television stations
- governments
- large corporations
- private consulting firms.

Advertising agencies recommend that people who have not had previous training in advertising study ads currently in circulation critically and read books or other publications on the topic. Applicants for jobs should provide portfolios of their work and may be required to take a writing skills assessment.

Initially, a copywriter's position may be difficult to obtain. Experience writing for school or community publications, and sales experience are definite assets.

There are relatively few specialized advertising agencies in Alberta. Generally, copywriters start working with smaller print or broadcast media companies and progress to larger newspapers, radio or television stations. In larger stations and agencies, there may be opportunities to advance to copy chief or creative director positions.

With additional training, copywriters may move into areas such as broadcast sales, promotions or production; public relations; fund-raising or marketing. Or they may choose to move into a different area media or do freelance work.

Advertising copywriters are part of the larger National Occupational Classification 5121: Authors and Writers. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Information, Culture and Recreation**
- **Professional and Technical Services**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 2,450 Albertans are employed in the Authors and Writers occupational group which is expected to grow 1.0 to 2.0 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 20 to 50 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since advertising copywriters form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for advertising copywriters.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Authors and Writers occupational group working part-time or full-time earned from **$15,300 to $85,400 a year.** The average salary was **$42,600 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)
EDinfo website: www.alis.gov.ab.ca/edinfo

Related Occupational Profiles

Advertising Account Executive
Creative Writer
Songwriter

Related High School Subjects

Communication Technology; Language Arts; and Management and Marketing

Related Post-Secondary Fields of Study

Communications; Humanities and Languages; and Social Sciences, Law and Religious Studies

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For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Aerospace Engineer

Produced JUNE 2004

Aerospace engineers research, design, develop, test, manufacture and maintain aerospace vehicles and systems such as commercial and military aircraft, missiles, spacecraft and related aerospace equipment.

NOC Number(s): 2146
Minimum Education: 4 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: I O D

Duties

Aerospace engineers may specialize in:

- flight testing or simulation
- aerodynamics
- structures and materials
- structural dynamics
- mass and weight analysis
- stress analysis
- propulsion systems
- systems analysis
- avionics systems
- navigation systems
- robotics
- project management
- maintenance
- component and system design
- qualification testing of components
- stability, control and performance of flight systems
- manufacturing: machining, forming and joining aerospace materials and composites
- particular products such as military aircraft, helicopters, surveillance systems, simulators, ground stations, satellites or rockets.

Some of the specializations within aerospace engineering are described below:

Aerospace engineers specializing in aerodynamics deal with the forces generated by motion through the air which affect aircraft performance. Working with design engineers and using computers and wind tunnels to simulate flight, they:

- study and develop appropriate designs for aircraft, rocket vehicles and spacecraft that also fly through the atmosphere (e.g. the shuttle on its re-entry)
- analyze and test the effects of airflow to obtain the information they need to design appropriate structures
- determine the aerodynamic loads used by structural engineers (see below).

Structural engineers determine if the aircraft or spacecraft will safely carry the loads it is designed to carry. Structural/stress analysis and testing is required to determine safety margins for aircraft, rockets and spacecraft.

Design engineers design and develop new aircraft, spacecraft and their components, or make improvements to the design of existing crafts. Design engineers:

- analyze and optimize the constraints associated with the aerodynamics, stability, structures, materials and propulsion systems of aircraft and spacecraft, and determine how these factors affect the craft
- conduct fretting fatigue analyses
- apply principles of concurrent engineering and design to ensure manufacturability and reduce impact on the environment
- use computer-aided design (CAD) applications to translate specific design specifications into drawings and

standards for performance.

Aerospace engineers specializing in **experimental testing** construct models and analyze prototypes to test the aerodynamics, stability, control, propulsion and structural performance of a proposed design. These aerospace engineers:

- make modifications to the design and study test results to determine the effects of such factors as weight distribution
- test the performance of aircraft, spacecraft or components by determining the operating conditions likely to exist and recording the actual conditions that did exist during testing.

Materials engineers are responsible for selecting the specific type of materials to be used in each section of the aircraft or spacecraft to ensure high strength-to-weight ratios and resistance to heat or cold. Materials engineers:

- decide which processes (e.g. heat-treating or plating) should be used to make materials usable without destroying their desired properties
- prepare specifications and procedures for the use of particular materials and treatment processes
- advise engineering, manufacturing and quality control departments on the properties, application, treatment, salvage and substitution of materials.

Project management engineers develop workplans and schedules designed to ensure the timely production of quality products, and avoid cost increases and delays in production. Project management engineers:

- estimate costs
- co-ordinate work flow
- work with other engineers to solve technical problems associated with production
- apply and implement ISO (International Organization for Standardization) principles and procedures
- supervise each stage of the production process to meet production schedules until the project is completed.

Working Conditions

Aerospace engineers work primarily indoors in offices and testing laboratories. They spend a considerable amount of time working with computers. They may also supervise work performed at production sites or manufacturing facilities, or work at a field site such as a launching pad.

Aerospace engineers may be required to work overtime to meet project deadlines. Project managers may be called back to work whenever there are problems with projects. They experience a great deal of pressure to meet deadlines or design standards. Some traveling may also be required.

Personal Characteristics

Aerospace engineers need the following characteristics:

- inquiring, creative and inventive minds
- patience, motivation, determination and perseverance
- strong problem-solving skills
- an aptitude for mathematics and science
- excellent oral and written communication skills
- a capacity for details.

They should enjoy being innovative, doing work that requires precision and working in a team environment.

Educational Requirements

The minimum educational requirement for entry-level employment as an aerospace engineer is a **bachelor's degree in engineering or applied science.** Advanced specialist engineers in the aerospace industry should have at least a master's degree. Aerospace engineers engaged in research and development frequently have doctoral (PhD) degrees.

Several Canadian post-secondary institutions offer degree programs related to aerospace engineering:

- **Carleton University** in Ottawa offers bachelor's, master's and doctoral degree programs in aerospace engineering.
- **McGill University** in Montreal offers a master's degree program in aerospace engineering in collaboration with **Concordia University** in Montreal, **Ecole Polytechnique**, **Universite de Laval** and **Universite de Sherbrooke**.
- **Ryerson University** in Toronto offers bachelor's, master's and doctoral degree programs in aerospace engineering.
- **University of Toronto,** Faculty of Applied Science and Engineering offers a bachelor's degree program in

Engineering Science with an aerospace specialization. Master's and PhD programs are offered by the **University of Toronto Institute for Aerospace Studies.**

- **York University** in North York offers a bachelor's degree program in space and communication sciences that includes industrial internships. York University's Centre for Research in Earth and Space Science offers graduate studies programs in earth and space sciences.

A high school graduate may, however, enroll in any university-level engineering or science program and then specialize in aerospace engineering at the post-graduate level. A number of universities have mechanical engineering programs with some emphasis on aeronautical and aerospace disciplines.

In Alberta, four year degree programs in engineering are offered by:

- the **University of Alberta** in Edmonton
- the **University of Calgary**.

The minimum admission requirement for engineering programs at both universities is a high school diploma with an overall average of 78 or 80 per cent in English 30, Pure Math 30, Math 31, Chemistry 30 and Physics 30.

Post-secondary institutions throughout the province offer university transfer programs that allow students to apply up to two years of study to university bachelor's degree programs. It is the student's responsibility to ensure that the courses they choose to take will be accepted for credit at the institution to which they wish to transfer.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Other Requirements

(section revised OCTOBER 2004)

Under Alberta's Engineering, Geological and Geophysical Professions Act, you must be a registered member of the Association of Professional Engineers, Geologists and Geophysicists of Alberta (APEGGA) to practice as a Professional Engineer. You do **not** have to be registered if you work under the direct supervision of a Professional Engineer and do not call yourself a Professional Engineer.

Employment and Advancement

(section revised JANUARY 2006)

Employment in aerospace engineering is concentrated in cities such as Montreal, Toronto, Ottawa and Winnipeg and on military bases. There is some aerospace-related activity in Amherst and Dartmouth, Nova Scotia; Saskatoon, Saskatchewan; Edmonton, Calgary and Medicine Hat, Alberta; and Richmond and Kelowna, British Columbia.

Aerospace engineers usually start work under the direct supervision of senior engineers. With experience and a good track record, they are given additional responsibilities. They can advance to positions such as project manager, department head, division manager and vice president.

In Alberta, over 75 per cent of people employed as aerospace engineers work in the following industries:

- **Other Manufacturing**
- **Transportation and Warehousing**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 50 Albertans are employed in the Aerospace Engineers occupational group which is expected to grow 1.5 to 2.5 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

No information is currently available regarding salary ranges in Alberta in this occupation.

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Association of Professional Engineers, Geologists and Geophysicists of Alberta (APPEGA) website: www.apegga.org

Related Occupational Profiles

Aircraft Maintenance Engineer
Canadian Forces Personnel - Commissioned Officer
Electrical Engineer
Mechanical Engineer

Related High School Subjects

Design Studies; Electro-Technologies; Fabrication Studies; Information Processing; Language Arts; Mathematics; Mechanics; and Science (Chemistry; and Physics)

Related Post-Secondary Fields of Study

Engineering, Architecture and Related Studies

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Agricultural Commodity Inspector

Produced FEBRUARY 2005

Agricultural commodity inspectors ensure that agricultural products meet the production, storage and transportation standards set by federal and provincial agriculture departments.

NOC Number(s): 2222.2
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **M i d**

Duties

The duties and responsibilities of agricultural commodity inspectors vary depending on the types of products they inspect (e.g. fruits and vegetables, meat, grains). They may specialize in a particular type of product or inspect more than one type of product. In general, however, they:

- conduct inspections, checking for sanitation, quality control and food safety programs
- ensure accurate product labelling and packaging
- interpret and enforce government acts and regulations, explain the standards required and make recommendations to agricultural product plant managers.

Dairy inspectors:

- conduct hazards analysis and critical control point (HACCP) inspections in dairy plants
- inspect dairy products, taking samples for microbiological assessment, ingredient verification, chemical residue testing and vitamin testing
- register dairy plants
- ensure that transportation and handling meet regulatory requirements
- ensure uniform standards of quality and proper labelling of pre-packaged products.

Some dairy inspectors specialize in providing consultative services for dairy plants in areas such as problem solving, equipment and product evaluation, plant construction and layout or food safety systems.

Fruit and vegetable inspectors:

- inspect fresh and processed fruit and vegetable products (including honey) at all stages of merchandising (with the exception of the retail phase)
- monitor the application of grade packaging and marking regulations
- inspect imported produce to check for disease or damage resulting from transit, storage or handling, and to ensure proper grading and labelling
- check processing plants for sanitation, quality and compliance with product standards.

Meat inspectors work in meat processing facilities where they:

- determine if animals are healthy and fit for slaughter
- inspect animal carcasses to determine if they are fit for consumption
- identify carcasses and portions of carcasses suspected of disease
- inspect facilities for sanitation and adherence to federal and provincial regulations regarding the manufacture, preparation and packaging of meat products.

Poultry inspectors:

- inspect wholesale establishments, storage facilities, registered egg stations, hatcheries or egg product plants
- monitor the grading done by company employees
- inspect sanitation procedures
- certify that the quality and condition of finished products meet established standards.

Plant products inspectors:

- examine the products of feed mills, seed cleaning plants, fertilizer plants, pedigree seed growers and formulated

pesticide retail outlets
- collect samples for laboratory analysis and ensure that the information contained on pesticide, fertilizer, seed and feed labels is correct
- inspect farmers' fields for purity of variety of pedigreed seed, establish the grade of seed, and label and seal the graded product.

Working Conditions

Agricultural commodity inspectors experience a wide variety of working environments depending on their specialty. They may work in:

- livestock auction markets and terminal yards
- frozen food plants
- canneries
- dairy plants
- meat and poultry processing plants
- hatcheries or egg stations
- nurseries
- fertilizer manufacturers, blenders and outlets
- feed mills
- producer fields
- pesticide manufacturing plants or distribution warehouses
- farms
- seed cleaning/conditioning plants.

Agricultural commodity inspectors may encounter unpleasant odours and loud noises from animals and machines. Lifting (up to 10 kilograms) is often required.

Commodity inspectors may meet many different people during a working day, and may be required to do a considerable amount of travelling. They sometimes work long and irregular hours.

Personal Characteristics

Agricultural commodity inspectors need the following characteristics:

- the ability to communicate well in person and in writing
- the ability to pay close attention to details.

They should enjoy having clear rules and organized methods for their work, analyzing information, and dealing with people.

Educational Requirements

The minimum education requirement for agricultural commodity inspectors is a high school diploma plus related experience or training. However, a post-secondary diploma or degree in a related subject (e.g. agriculture, animal health technology, food science) is a definite asset. Dairy specialists **must** have a related university degree such as a Bachelor of Science (B.Sc.) degree in Agriculture.

In Alberta, the following post-secondary institutions offer agriculture-related diploma and degree programs.

- **Lakeland College** in Vermilion
- **Lethbridge Community College**
- **Olds College**
- **University of Alberta** in Edmonton
- **University of Lethbridge**

Admission requirements vary, but generally include a high school diploma with specified Grade 12 English, math and science courses.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

For information about animal health technology and food science programs, see the Animal Health Technologist, Food Scientist and Food Science Technologist occupational profiles.

Federal government meat inspectors undergo a three year on-the-job training program. Alberta government inspectors

undergo a two year on-the-job training program. All agricultural commodity inspectors must take professional development courses on an ongoing basis to keep up to date.

Employment and Advancement

(section revised JANUARY 2006)

Agricultural commodity inspectors are employed by provincial agricultural departments and the federal government's Canadian Food Inspection Agency.

Inspector trainees are trained on the job under the direction of an experienced inspector. Because inspectors' jobs are specific to particular industries, working and learning on the job is really the only comprehensive means of training. All trainees' activities are supervised while they learn legislation and regulations, and develop skills and judgment. After an initial training period of six months to one year, trainees are given increased responsibility. By their third year, they become full working-level inspectors who are capable of working independently.

Agricultural commodity inspectors are part of the larger National Occupational Classification 2222: Agricultural and Fish Products Inspectors. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Public Administration**
- **Food and Beverage Products Manufacturing**.

The employment outlook in this occupation will be influenced by a wide variety of factors including

- trends and **events** affecting overall employment (especially in the industries listed above),
- **location** in Alberta,
- **employment turnover** (work opportunities generated by people leaving existing positions),
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before), and
- **size of the occupation.**

Over 350 Albertans are employed in the Agricultural and Fish Products Inspectors occupational group which is expected to grow 1.5 to 2.5 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised SEPTEMBER 2005)

Salaries for agricultural commodity inspectors vary according to the type and level of work performed.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Agricultural and Fish Products Inspectors occupational group working part-time or full-time earned an average salary of **$46,500 a year**.

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Agriculture, Food and Rural Development (AAFRD) website: www.agric.gov.ab.ca

Canadian Food Inspection Agency (CFIA) website: www.inspection.gc.ca

Related Occupational Profiles

Agricultural Products Processing Machine Operator
Agrologist
Animal Health Technologist
Food Science Technologist
Food Scientist

Related High School Subjects

Agriculture; Community Health; Foods; Language Arts; Mathematics; and Science (Biology; and Chemistry)

Related Post-Secondary Fields of Study

Agriculture and Related Technologies; and Human Ecology, Fashion and Food Sciences

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For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Agricultural Engineer

Produced JUNE 2004

Agricultural engineers integrate engineering science and design with applied biological science to solve problems in agriculture, food and other resource industries.

NOC Number(s): 2148.1
Minimum Education: 4 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **I O D**

Duties

Agricultural engineers may specialize in areas such as the relationships among organisms and their environments, soil and water, structures and environments, power and machinery, electronic and computer applications, or electrical power and processing. Depending on their specialty, they may:

- use computer-aided design (CAD) technology to design equipment and machine parts
- develop plans for the design and layout of agricultural structures and utilities such as farm buildings, farm electrical systems or feed processing plants
- develop plans for drainage, waste management, land improvements and irrigation
- design and supervise environmental and land reclamation projects in agriculture and other related industries
- carry out environmental studies
- develop technologies and practices to improve the sustainability of crop and livestock production
- design food processing plants and related mechanical systems
- supervise food or agricultural value-added processing or manufacturing plant operations.

Working Conditions

Agricultural engineers work in offices but sometimes travel to production or processing sites, research laboratories or other locations to do field tests or study equipment and processes. Their work can be very demanding and time consuming due to the seasonal and weather-dependent nature of the industries in which they work.

Personal Characteristics

Agricultural engineers need the following characteristics:

- an aptitude for mathematics, physics, mechanics and the biological sciences
- strong computer skills
- the ability to analyze and solve problems
- a strong work ethic
- good communication skills, both oral and written.

They should enjoy being innovative and doing work that requires precision.

Educational Requirements

Agricultural engineering students may find a farm background helpful, but it is not essential.

A **bachelor's degree in agricultural or bioresource engineering** is the usual educational prerequisite for working in this field, although individuals who have degrees in civil, mechanical or other branches of engineering may work in certain types of agricultural engineering positions.

There is currently no bachelor's degree program in agricultural engineering available in Alberta. However, a scholarship is available for Alberta students studying in this field in other provinces. For more information, contact the Office of Student Awards at the University of Alberta.

The **University of Saskatchewan** College of Engineering in Saskatoon offers a Bachelor of Science degree in Agricultural and Bioresource Engineering. The university also offers related master's and doctoral degree programs. The admission requirement for the bachelor's degree program is a high school diploma with English 30, Pure Math 30, Biology 30, Physics 30 and Chemistry 30. Math 31 is recommended but not required.

For current information about programs (i.e. admission requirements) and mature student admission policies, please check post-secondary calendars or websites.

Post-secondary institutions across Alberta offer university transfer programs that allow students to apply up to two years of study toward university bachelor's degree programs. It is the student's responsibility to ensure that the courses they choose to take will be accepted for credit at the institution to which they wish to transfer.

Other Requirements

(section revised OCTOBER 2004)

Under Alberta's Engineering, Geological and Geophysical Professions Act, you must be a registered member of the Association of Professional Engineers, Geologists and Geophysicists of Alberta (APEGGA) to practice as a Professional Engineer. You do **not** have to be registered if you work under the direct supervision of a Professional Engineer and do not call yourself a Professional Engineer.

Employment and Advancement

(section revised JANUARY 2006)

Agricultural engineering graduates usually begin working as trainees. As they gain experience, they advance to positions of greater responsibility within industry, government, universities or research institutes. Agricultural engineers in industry are employed by:

- producers, manufacturers and distributors of agricultural machinery, equipment and structures
- power and light companies
- food processing firms
- firms in the energy industry
- consulting firms.

They work as:

- project managers
- designers
- researchers
- sales and service advisors
- production managers.

In government, agricultural engineers may work:

- in community education
- in applied research
- in regulatory positions
- as consultants on the development of agricultural projects relating to the construction of specially designed buildings, machinery, irrigation and drainage, waste handling and energy conservation systems.

Teaching or doing research at the university level generally requires a doctoral (PhD) degree.

Advancement may come through assignments to more difficult or more responsible work, doing independent agricultural research, or developing new agricultural products. For those who have an interest in supervisory, administrative, or management positions, work as a chief engineer or plant manager may be an option. Many engineers seeking executive positions obtain graduate training in engineering or business administration to improve their opportunities for advancement.

Agricultural engineers are part of the larger National Occupational Classification 2148: Other Professional Engineers. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Professional and Technical Services**
- **Oil and Gas Extraction**
- **Public Administration**
- **Other Manufacturing**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 950 Albertans are employed in the Other Professional Engineers occupational group which is expected to grow 1.2 to 2.2 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 10 to 30 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since agricultural engineers form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for agricultural engineers.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

A growing number of agricultural engineers are finding employment in developing countries where their skills are needed to adapt existing technologies to local conditions.

Salary

(section revised SEPTEMBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans working part-time or full-time in the Other Professional Engineers occupational group earned **up to $79,900 a year**. Those with three years of experience earned from **$41,500 to $67,200 a year.** The average salary was **$60,000 a year**.

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

Association of Professional Engineers, Geologists and Geophysicists of Alberta (APEGGA) website: www.apegga.org

Agricultural Engineering Branch, Alberta Agriculture, Food and Rural Development website: www.agric.gov.ab.ca

Related Occupational Profiles

Environmental Engineer
Mechanical Engineer

Related High School Subjects

Agriculture; Design Studies; Information Processing; Language Arts; Mathematics; Mechanics; Science (Biology; Chemistry; and Physics); and Wildlife

Related Post-Secondary Fields of Study

Engineering, Architecture and Related Studies

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Agricultural Equipment Technician

Apprenticeship and Industry Training

Produced FEBRUARY 2006

Agricultural equipment technicians repair, overhaul and maintain agricultural equipment such as tractors, tillage, seeding and harvesting equipment.

NOC Number(s): 7312
Minimum Education: Apprenticeship Trade
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: O M I

Duties

Duties vary from one position to another but, in general, agricultural equipment technicians:

- service and repair engines, transmissions, hydraulic systems, and the electrical and electronic systems of agricultural equipment
- pinpoint problems by discussing equipment operation with owners, visually checking and listening to machinery in operation, and using testing equipment
- take defective units apart, and repair or replace broken, worn-out or faulty parts
- reassemble, adjust, lubricate and test repaired units
- assemble and adjust new farm machinery.

They may specialize in fuel injection pumps and injectors, engine overhaul, hydraulic systems, power shift transmissions or specific types of equipment (e.g. combines).

Working Conditions

Agricultural equipment technicians may work in fully equipped service centres or they may travel to farms to make service calls. They may work long and hectic hours during planting and harvesting seasons.

Agricultural equipment technicians may be required to lift items weighing over 25 kilograms.

Personal Characteristics

Agricultural equipment technicians need the following characteristics:

- mechanical ability and good hand-eye co-ordination
- the flexibility of working overtime when required
- physical strength and stamina
- the ability to read and understand technical manuals
- the ability to work independently with little supervision
- effective interpersonal and good customer service skills.

They should enjoy working with their hands and be capable of diagnosing complex mechanical problems.

Educational Requirements

Apprentices need some experience in the agriculture industry.

To work in Alberta, agricultural equipment technicians must be ONE of the following:

- registered apprentices
- certified journeymen
- working for an employer who is satisfied that they have the skills and knowledge expected of certified journeymen
- self-employed.

To **register** with **Alberta Apprenticeship and Industry Training**, apprentices must:

- have at least an Alberta high school transcript with a minimum of 100 credits with Math 10 or 13, Applied Math 10 or Pure Math 10 (or equivalent) or pass an entrance exam
- find a suitable employer who is willing to hire and train an apprentice. Most employers prefer to hire high school graduates and may select apprentices from among their current employees.

The **term of apprenticeship** is four years (four 12-month periods) that include a minimum of 1,500 hours of on-the-job training and eight weeks of technical training each year. High school students can become apprentices and gain credits toward apprenticeship training and a high school diploma at the same time through the Registered Apprenticeship Program (RAP).

Applicants who have related training or work experience may be eligible for credit or certification.

Agricultural equipment technician apprentices may attempt the Interprovincial Exam in the final period of their apprenticeship training and, if successful, are granted a Red Seal (which is recognized in most parts of Canada).

Technical training is arranged by Alberta Apprenticeship and Industry Training and is currently offered at:

- Keyano College in Fort McMurray
- Lakeland College in Vermilion
- Lethbridge Community College
- the Northern Alberta Institute of Technology (NAIT) in Edmonton and Fairview
- Olds College
- Red Deer College
- the Southern Alberta Institute of Technology (SAIT) in Calgary.

Outside the apprenticeship program, the following post-secondary institutions offer related training:

- **Lakeland College** in Vermilion offers a six-month Agricultural Mechanics certificate program. The entrance requirement is Grade 10 or equivalent. Students must supply their own basic tools. A farm background is an asset.
- **Lethbridge Community College** offers a one year Agricultural and Heavy Equipment Technician certificate program. The entrance requirement is Applied Math 20 or Pure Math 20 and English Language Arts 20-1 or 20-2 or equivalent.
- **Olds College** offers a two year Agricultural Mechanic diploma program. The entrance requirement is a high school diploma or equivalent with Pure Math 20 or Applied Math 20 and English Language Arts 30-1 or 30-2.

Pre-employment programs for prospective apprentices and continuing education programs for journeymen may be offered on an as needed basis by the institution(s) listed above or other schools.

For current information about programs and mature student admission policies, please check post-secondary calendars or websites.

Agricultural implement companies sometimes provide short manufacturers' service courses to help agricultural equipment technicians develop essential skills for servicing a particular line of equipment.

Employment and Advancement

Agricultural equipment technicians are employed by retail farm machinery dealerships.

Where a number of technicians are employed by one business, the opportunity exists for advancement to supervisory positions. Alberta certified journeyman agricultural equipment technicians who have the supervisory or management skills required by industry may apply for an Achievement in Business Competencies Blue Seal by contacting Alberta Apprenticeship and Industry Training.

Some agricultural equipment technicians move into sales positions or become manufacturer's service representatives. Those who have business and administrative skills may move into a management position or purchase a farm machinery dealership.

Agricultural equipment technicians are part of the larger National Occupational Classification 7312: Heavy-Duty Equipment Mechanics. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Construction**
- **Oil and Gas Extraction**
- **Wholesale Trade**
- **Repair, Maintenance, Personal and Other Services**
- **Transportation and Warehousing**

- **Metals, Metal Fabrication and Machinery Manufacturing**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 8,950 Albertans are employed in the Heavy-Duty Equipment Mechanics occupational group which is expected to grow 2.0 to 3.0 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 170 to 270 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since agricultural equipment technicians form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for agricultural equipment technicians.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Apprentice agricultural equipment technicians are paid at least 60 per cent of the journeyman wage rate in their place of employment in their first year, 70 per cent in the second, 80 per cent in the third and 90 per cent in the fourth. According to the Alberta Provincial Apprenticeship Committee for this trade, journeyman wage rates vary, but generally range from **$16 to $32 an hour plus benefits** (2005 estimate).

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Heavy-Duty Equipment Mechanics occupational group working part-time or full-time earned from **$22,000 to $126,800 a year.** The average salary was **$55,900 a year.**

Other Sources of Information

Alberta Apprenticeship and Industry Training website: www.tradesecrets.org

Post-secondary institution calendars or websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Canada West Equipment Dealers Association website: www.cweda.ca

Related Occupational Profiles

Heavy Equipment Technician

Related High School Subjects

Agriculture; Design Studies; Electro-Technologies; Fabrication Studies; Language Arts; Mathematics; Mechanics; and Physical Education

Related Post-Secondary Fields of Study

Engineering and Science Technologies; and Trades, Industrial and Related Training

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For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Agricultural Products Processing Machine Operator

Produced FEBRUARY 2005

Agricultural products processing machine operators run machines that process and package food and beverage products.

NOC Number(s): 9461.2
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **O M i**

Duties

For simplicity, agricultural products processing machine operators are called machine operators throughout this profile. They operate various machines depending on the type of product being processed, the methods used and the size of the organization and plant.

In general, machine operators:

- operate single function and multi-function processing machines
- observe gauges, computer printouts and video monitors to ensure correct processing
- make adjustments as required
- maintain shift logs of production and other data
- prepare products for wholesale or retail distribution
- check product quality and adjust as necessary.

Depending on the type of operation, they also may:

- set up or adjust machines for specific processing operations
- package and label products for sale
- record production information
- serve customers
- load transport trucks.

Dairy plant machine operators run machines that pasteurize milk or process and package dairy products such as cheese, ice cream, butter, non-fat dry milk and condensed milk.

Fruit and vegetable machine operators operate machines that clean, wash, sort, trim, peel and cut fruit and vegetables. They may also operate machines that process fruit and vegetables and package products for sale.

Grain processing machine operators process grain into animal feed or food products such as flour, cereal, pasta, cooking oil, margarine or beer.

Working Conditions

Working conditions for machine operators vary. Most production line work is performed indoors in warm, sanitary and well-ventilated conditions. Some machine operators work in cold storage or freezing departments; in grain processing plants which can be dusty, near noisy machinery; or near cooking or sanitizing operations that generate heat and create humid surroundings. In some settings, machine operators work close to others in relatively small spaces.

Production line processing is often highly mechanized and automated. Machine operators must follow safe work practices and may be required to lift items weighing up to 25 kilograms.

Some plants operate 24 hours a day, seven days a week so employees work rotating shifts.

Personal Characteristics

Machine operators need the following characteristics:

- good health and stamina
- a high degree of co-ordination and manual dexterity
- the ability to work steadily and swiftly
- the ability to perform routine tasks yet remain alert and flexible
- the ability to read and understand written specifications and instructions, and adapt to new technologies
- the mechanical aptitude required to maintain equipment and trouble-shoot problems.

They should enjoy operating and controlling equipment, having clear rules and organized methods for their work, and adjusting machines and process variables such as cooking times and temperatures.

Educational Requirements

There are **no standard educational requirements** for work in a processing plant. However, employers may require job applicants to have a high school diploma or related post-secondary education. The degree of skill required to operate processing machinery varies depending on the nature of the operation.

On-the-job training is provided to teach workers how to operate and maintain machines, and trouble-shoot mechanical problems. Depending on the nature of the equipment, three months or more of on-the-job experience may be required before a machine operator is ready to work independently. In some situations, workers may be cross-trained on other machines as well.

Other Requirements

Pasteurizer operators are required to obtain a pasteurizer operator's license by successfully completing a mandatory three-and-a-half day licensing course. Licenses must be renewed annually.

Employment and Advancement

(section revised JANUARY 2006)

Agricultural products processing machine operators are employed by food and beverage processing plants including:

- bakeries
- breweries
- dairies
- flour mills
- fruit and vegetable processing plants
- meat plants
- sugar refineries
- seed plants and feedmills.

New employees usually start working as general plant help and may be rotated throughout the plant to gain overall exposure to the plant's operation. Advancement from general plant help to a skilled positions comes through specific on-the-job training. As employees become skilled in particular production processes, they may advance to positions such as lead hand or shift supervisor.

Agricultural products processing machine operators are part of the National Occupational Classification 9461: Process Control and Machine Operators, Food and Beverage Processing. In Alberta, most people employed in this classification work in the **Food and Beverage Products Manufacturing** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Food and Beverage Products Manufacturing industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 2,050 Albertans are employed in the Process Control and Machine Operators, Food and Beverage Processing occupational group which is expected to grow 1.2 to 2.2 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 20 to 50 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**:

Since agricultural products processing machine operators form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for agricultural products processing machine operators.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Salaries vary considerably depending on the size and nature of the plant and the level of skill required.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Process Control and Machine Operators, Food and Beverage Processing occupational group working part-time or full-time earned from **$11,900 to $54,000 a year.** The average salary was **$26,300 a year.**

Related Occupational Profiles

Agricultural Commodity Inspector
Feed Mill Production Worker
Meat Cutter

Related High School Subjects

Agriculture; Electro-Technologies; Mechanics; Physical Education; and Science (Chemistry)

Related Post-Secondary Fields of Study

Agriculture and Related Technologies; and Trades, Industrial and Related Training

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For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Agrologist

Produced AUGUST 2005

Agrologists provide advice and conduct research related to agricultural and environmental science and technology. They apply scientific principles to the production, improvement, use, processing and marketing of plants and animals, and the management of related resources.

NOC Number(s): 2123
Minimum Education: 4 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **I S D**

Duties

Agrologists may be involved in agricultural science and technology fields ranging from farming, food processing, packaging, transportation and marketing to the protection of soil, water and wildlife resources. Those employed in the public sector may:

- develop and distribute information and advice for the public and stakeholders in the agri-business and agri-food industries
- develop and distribute specialized information and training materials for producers (e.g. grain farmers, livestock producers)
- manage and co-ordinate government programs and make recommendations regarding agricultural and resource use policies
- anticipate economic opportunities and challenges, and develop appropriate strategies
- promote the sustainable development of agricultural resources
- act as liaisons between researchers, government personnel, business managers, environmental groups, educators and others
- conduct research and prepare research reports.

Agrologists employed in the private sector may be involved in:

- crop or livestock production
- market development
- production input management
- agri-food business management
- ensuring products meet quality and regulatory requirements
- research and development of new products and services
- sales and marketing (for more information, see the Technical Sales Representative occupational profile).

Agrologists usually specialize in specific fields such as:

- beef, pork, poultry or diversified livestock production
- production of grain and other field crops
- farm management
- agri-business development and marketing
- soil and land management
- reclamation and remediation
- design and management of irrigation and drainage systems
- agri-business financial planning and lending
- land use planning
- education and training about particular aspects of agriculture.

Working Conditions

Working environments in this occupation range from offices and research settings to processing and manufacturing facilities to farm fields and ranch pastures. In rural areas, agrologists may spend long hours travelling. They generally work weekday office hours but may be required to do some evening and weekend work. Workloads may vary depending on the season.

Personal Characteristics

Agrologists need the following characteristics:

- the intellect, curiosity, creativity, patience and perseverance required to solve complex problems and keep their technical knowledge up to date
- good oral and written communication skills
- good organizational skills
- good analysis and problem solving skills
- interpersonal and leadership skills
- the ability to work independently or as part of a team.

They should enjoy co-ordinating, analyzing and synthesizing information to develop innovative solutions to problems, working with people, and advising and supervising others.

Educational Requirements

The minimum education requirement is the equivalent of a **four year bachelor's degree in agriculture** that is recognized by the Alberta Institute of Agrologists (AIA). Applicants also must complete articling requirements. A farm background is an asset but not required.

In Alberta, the AIA recognizes programs offered by the **University of Alberta** in Edmonton and the **University of Lethbridge**:

- the University of Alberta four year Bachelor of Science (B.Sc.) degree program in Agriculture. The entrance requirement is an average of 65 to 80 per cent in English Language Arts 30-1 (or English 30), Pure Math 30 (or Math 30), Biology 30, Chemistry 30 and one other approved 30 level subject.
- the University of Alberta four year B.Sc. program in Agricultural/Food Business Management. The entrance requirement is completion of 30 credits in the Agriculture program, 24 of which must be transferable, and a minimum grade point average (GPA) of 2.7/4.
- the University of Alberta four year B.Sc. program in Environmental and Conservation Sciences. The entrance requirement is an average of 65 to 80 per cent in English Language Arts 30-1 (or English 30), Pure Math 30 (or Math 30), Biology 30, Chemistry 30 and one other approved 30 level subject.
- the University of Lethbridge four year Bachelor of Arts program in Agricultural Studies. The entrance requirement is an average of at least 65 per cent in English Language Arts 30-1 (or English 30), Pure Math 30 (or Math 30 or equivalent), two other 30 level subjects and a fifth Grade 12 subject. Biology 30 is recommended.
- the University of Lethbridge four year B.Sc. program in Agricultural Studies. The entrance requirement is an average of at least 65 per cent in English Language Arts 30-1 (or English 30), Pure Math 30 (or Math 30 or equivalent), Biology 30, Chemistry 30 and another Grade 12 subject. Math 31 is recommended.
- related graduate degree programs offered by both universities.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary institution calendars or websites.

Post-secondary institutions throughout the province offer university transfer programs that allow students to apply up to two years of study toward university bachelor's degree programs. It is the student's responsibility to ensure that the courses they choose to take will be accepted for credit at the institution to which they wish to transfer.

Other Requirements

(section revised SEPTEMBER 2005)

Agrologist is a protected title under Alberta's Agrologists Act. This means that to call yourself an Agrologist, you must be a registered member of the Alberta Institute of Agrologists (AIA). You do **not** have to be a registered AIA member to work in Alberta; however, employers may prefer to hire job applicants who are registered AIA members.

Employment and Advancement

(section revised JANUARY 2006)

Agrologists work for:

- federal, provincial and municipal government departments
- manufacturers and suppliers of agricultural production inputs (e.g. fertilizers, pesticides, feedstuffs, seeds, livestock)
- farm business advisory services
- financial institutions
- agri-food companies
- agricultural producers
- conservation authorities
- educational institutions
- consulting and appraisal firms
- oil and gas companies
- land reclamation companies.

Self-employed agrologists work on a contract basis.

New graduates may work on a seasonal basis until they gain experience. A doctoral degree is usually required to direct and administer research programs or teach at the university level.

Experienced agrologists may advance to supervisory and management positions.

Agrologists are part of the National Occupational Classification 2123: Agricultural Representatives, Consultants and Specialists. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Professional and Technical Services**
- **Public Administration**
- **Wholesale Trade**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 550 Albertans are employed in the Agricultural Representatives, Consultants and Specialists occupational group which is expected to grow 1.3 to 2.3 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover. (Note: Not all agrologists are employed in this classification. For example, some may be classified in 2115: Other Professional Occupations in Physical Sciences or 6221: Technical Sales Specialists - Wholesale Trade. For more information, see the Soil Scientist and Technical Sales Representative occupational profiles.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised SEPTEMBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans working part-time or full-time in the Agricultural Representatives, Consultants and Specialists occupational group earned **up to $72,200 a year.** The average salary was **$61,200 a year**.

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)
EDinfo website: www.alis.gov.ab.ca/edinfo

Agriculture Institute of Canada (AIC) website: www.aic.ca

Alberta Agriculture, Food and Rural Development website: www.agric.gov.ab.ca

Alberta Institute of Agrologists (AIA) website: www.aia.ab.ca

Careers in Agriculture and Food Sciences website: www.agriscience.ca

Related Occupational Profiles

Agricultural Commodity Inspector
Biologist
Biotechnologist
Career and Technology Studies Teacher
Ecologist
Entomologist
Environmental Auditor
Environmental Education Specialist
Food Scientist
Forester
Geneticist
Microbiologist
Pharmacologist
Seed Cleaning/Conditioning Plant Manager
Soil Scientist
Technical Sales Representative
Toxicologist

Related High School Subjects

Agriculture; Communication Technology; Enterprise and Innovation; Financial Management; Language Arts; Management and Marketing; Mathematics; Science (Biology; Chemistry; and Physics); and Wildlife

Related Post-Secondary Fields of Study

Agriculture and Related Technologies

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Air Traffic Controller

Produced OCTOBER 2005

Air traffic controllers are responsible for the safe, efficient and orderly movement of aircraft within an assigned airspace and on the ground at airports.

NOC Number(s): 2272.1
Minimum Education: High school diploma
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **O M D**

Duties

Air traffic controllers specialize in VFR (Visual Flight Rules) or IFR (Instrument Flight Rules) control. Straight line of sight enables VFR controllers to identify and resolve visual air traffic conflicts. IFR controllers use radar, procedural standards and the Northern Airspace Display System (NADS).

Tower controllers direct air traffic within a five to fifteen kilometre radius around an airport. They work in a glass-walled room at the top of airport control towers. As a group, they are responsible for ensuring the safe separation and movement of airport vehicles and departing, landing and taxiing aircraft.

Enroute/terminal controllers work at area control centres where they:

- use radar and communications technologies to track flights and keep aircraft separated as they fly along airways (usually above 20,000 feet) and land or take off at airports that do not have control towers
- transfer control to other controllers when aircraft leave the control centre's airspace
- start search and rescue operations to find overdue aircraft.

Each area control centre is responsible for more than 250,000 square kilometres of airspace (that generally covers an entire province) and has between 110 and 250 controllers on staff.

Working Conditions

Air traffic controllers normally work rotating shifts so their days off don't necessarily fall on the weekend. In most facilities, shifts cover the full 24 hours each day.

On the job, air traffic controllers must make rapid decisions and often work under considerable pressure.

Personal Characteristics

Air traffic controllers must be:

- decisive
- stable
- mature
- mentally alert
- able to accept responsibility
- able to handle details quickly and accurately
- able to take two dimensional data and convert it into three dimensional visualizations.

They should enjoy using specialized equipment and instruments, having clear rules and organized methods for co-ordinating information, and taking charge of situations.

Educational Requirements

To be employed by NAV Canada, air traffic controllers must:

- be Canadian citizens or landed immigrants
- be at least 18 years of age
- have successfully completed Grade 12 or equivalent education
- pass the Air Traffic Controller basic aptitude exam and interview
- qualify for security clearance
- pass a civil aviation medical exam
- have good hearing and vision (including colour perception)
- have good oral communication skills (diction, enunciation, voice projection) and a command of the English language for positions outside of Quebec. Knowledge of both English and French is essential for positions in Quebec and Ottawa.

Recommended high school courses include mathematics (algebra and trigonometry) and physics. Experience talking to groups or over microphones, and hobbies that require some knowledge of air regulations and aeronautics are assets.

After VFR (airport controller) candidates are accepted into the training program, they are enrolled in the **NAV Canada** Training Institute at Cornwall, Ontario, for five to six and a half months. After IFR (enroute/terminal controller) candidates are accepted, they are enrolled at an Airport Control Centre for anywhere from 156 to 319 training days. Entrance and training standards are very high; not all candidates successfully complete the training.

Employment and Advancement

(section revised JANUARY 2006)

Air traffic controllers are employed by NAV Canada. Application forms and information are available on the **NAV Canada website** or by calling 1-877-389-9934.

After their training, air traffic controllers may be assigned to any Air Traffic Control Centre or Tower in Canada.

Air traffic controllers are part of the larger National Occupational Classification 2272: Air Traffic Control and Related Occupations. In Alberta, most people employed in this classification work in the **Transportation and Warehousing** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Transportation and Warehousing industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 800 Albertans are employed in the Air Traffic Control and Related Occupations group which is expected to grow 1.5 to 2.5 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 10 to 20 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since air traffic controllers form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for air traffic controllers.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Salaries for air traffic controllers range from **$43,000 to $101,00 a year**. Trainees earn $30,000 a year **(2005 figures).** For current salary figures, see the NAV Canada website.

Other Sources of Information

Canadian Air Traffic Control Association (CATCA) website: www.catca.ca

NAV Canada website: www.navcanada.ca

Related Occupational Profiles

Airline Pilot
Canadian Forces Personnel - Commissioned Officer
Flight Service Specialist

Related High School Subjects

Communication Technology; Language Arts; Languages (other than English); Mathematics; Physical Education; and Science (Physics)

Related Post-Secondary Fields of Study

Aviation

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Aircraft Maintenance Engineer

Produced SEPTEMBER 2003

Aircraft maintenance engineers are licensed by Transport Canada to inspect and certify that work done on an aircraft complies with written airworthiness standards. They may specialize in different types of aircraft such as turbo jets, helicopters or propeller-driven airplanes.

NOC Number(s): 7315.1
Minimum Education: 2 years post-secondary education/training
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: **O I M**

Duties

Duties and responsibilities vary from one position to another but, in general, aircraft maintenance engineers:

- repair, replace, assemble and install aircraft parts
- test the operation of aircraft systems to locate the source of malfunctions and trouble-shoot problems
- inspect parts for wear or other defects
- perform routine maintenance tasks such as changing oil and cleaning filters
- conduct and record routine and special inspections as required by regulations
- certify that maintenance meets standards
- supervise aircraft maintenance workers
- make entries in technical records.

Working Conditions

Aircraft maintenance engineers work on aircraft indoors in hangars or shops, and outdoors. They may work in noisy environments, in uncomfortable positions or on scaffolds, and be required to lift items weighing up to 25 kilograms or use hoists to move larger, heavier objects. Having to work quickly while still observing safety standards can be stressful.

Aircraft maintenance engineers often work during the evening and night when airplanes are not in use. Shift work, overtime and being on call are common. Some aircraft maintenance engineers work away from home in remote locations for extended periods of time.

Personal Characteristics

Aircraft maintenance engineers need the following personal characteristics:

- excellent mechanical aptitude
- good eyesight and hearing
- good eye-hand and muscle co-ordination
- the desire and ability to be careful and accurate to the smallest detail
- the ability to work well with others but also to make decisions independently, often under pressure
- the physical fitness and agility required for reaching and climbing
- the ability to select, interpret and follow instructions provided in written or blueprint form, and to interpret regulations.

They should enjoy using tools, equipment and machinery to perform tasks requiring precision, analyzing information and troubleshooting problems, and having organized methods for their work.

Educational Requirements

(section revised JUNE 2004)

In Alberta, the following institutions offer training programs approved by Transport Canada. These are quota programs so better than minimum specified qualifications may be required to gain admission.

The **Northern Alberta Institute of Technology (NAIT)** in Edmonton offers:

- a one year (three semesters) Aircraft Skin and Structure Repair program. The entrance requirement is Grade 11 English, math and science (Physics 20 recommended).
- a two year Avionics Engineering Technology diploma program. The minimum admission requirement is a high school diploma or equivalent with English 30 or 33, Math 30 (or 60 per cent in Math 33 or Pure Math 30), and one of the following: Physics 30 (recommended), Science 30 or Chemistry 30. Keyboarding skills are an asset.

The **Southern Alberta Institute of Technology (SAIT)** in Calgary offers:

- a one year Aircraft Structures Technician certificate program. The entrance requirement is a high school diploma or equivalent with Grade 12 English and math.
- a two year Aircraft Maintenance Engineers Technology diploma program. The entrance requirement is a high school diploma with English 30 or 33 and Math 30, Math 33, Pure Math 30 or Applied Math 30.
- a two year Avionics Technology diploma program. The entrance requirement is a high school diploma with English 30 or 33 and Math 30, Math 33, Pure Math 30 or Applied Math 30.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Many companies provide ongoing compulsory and voluntary training courses to help their aircraft maintenance engineers upgrade and update their qualifications. To remain valid, a licence must be renewed every five years and the holder must meet current requirements.

Aircraft maintenance engineers are required to supply their own hand tools. Specialized tools and equipment are usually supplied by the employer.

Other Requirements

All maintenance on aircraft must be certified by **licensed** Aircraft Maintenance Engineers. AME licences are issued by Transport Canada in different categories and are further divided into specific groups (endorsements) within each category. Training, experience and examination requirements vary with each licence category and group but, in general, applicants for licensing must be:

- at least 21 years of age
- able to provide proof of citizenship
- able to read and answer examination questions in English or French, without assistance.

All applicants must write an air regulations exam.

An **AME - Category M** licence authorizes AMEs to certify work for the type of aircraft for which they are endorsed and trained (e.g. helicopters, piston powered airplanes, turbo propelled aeroplanes). To qualify, applicants must:

- have successfully completed a Transport Canada approved or accepted maintenance training course
- have four years of satisfactory maintenance experience, one year of which must be on complete aircraft for the group for which the individual is endorsed
- provide evidence of having completed at least 70 per cent of the tasks relevant to the category sought.

An **AME - Category E** licence authorizes AMEs to certify work on avionics systems. To qualify, applicants must:

- successfully complete a Transport Canada approved basic avionics training course
- have four years of maintenance experience on aeronautical products, one year of which must be on installed avionics systems for the appropriate group.

An **AME - Category S** licence authorizes AMEs to certify structural work on the type of structures for which they are trained. To qualify, applicants must have:

- successfully completed a Transport Canada approved or accepted structure training course
- three years of maintenance experience with twelve months appropriate to the group for which the AME is endorsed.

Employment and Advancement

(section revised JANUARY 2006)

Aircraft maintenance engineers may be employed by:

- large and small air carriers
- aircraft repair and overhaul companies
- flight training schools
- aeronautical product manufacturers
- component shops.

A willingness to relocate is an employment advantage.

Experienced, licensed aircraft maintenance engineers may advance to supervisory and management positions in approved maintenance organizations. Some aircraft maintenance engineers are employed as sales representatives for aeronautical products or quality control inspectors.

Aircraft maintenance engineers are part of a larger National Occupational Classification 7315: Aircraft Mechanics and Aircraft Inspectors. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Transportation and Warehousing**
- **Other Manufacturing**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 1,650 Albertans are employed in the Aircraft Mechanics and Aircraft Inspectors occupational group which is expected to grow 2.1 to 3.1 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 30 to 60 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since aircraft maintenance engineers form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for aircraft maintenance engineers.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Salaries for aircraft maintenance engineers depend on factors such as location, the size of the employing organization, the type and quality of equipment and aircraft, and the individual AME's licence and endorsements.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Aircraft Mechanics and Aircraft Inspectors occupational group working part-time or full-time earned from **$20,200 to $82,000 a year.** The average salary was **$48,800 a year.**

Since this group includes mechanics and inspectors who may not be licensed, salaries for licensed AMEs are probably toward the high end of this range.

Other Sources of Information

(section revised JUNE 2005)

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Canadian Aviation Maintenance Council website: www.camc.ca

Careers in Transportation website: www.transpocity.ca

Related Occupational Profiles

Aerospace Engineer
Avionics Technologist
Canadian Forces Personnel - Non Commissioned
Recreation Vehicle Service Technician
Sheet Metal Worker

Related High School Subjects

Design Studies; Electro-Technologies; Enterprise and Innovation; Fabrication Studies; Information Processing; Language Arts; Management and Marketing; Mathematics; Mechanics; Physical Education; and Science (Physics)

Related Post-Secondary Fields of Study

Aviation

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Airline Pilot

Produced OCTOBER 2003

Airline pilots fly aircraft transporting passengers, cargo and mail. With the exception of some small aircraft, a captain and first officer work together on commercial flights.

NOC Number(s): 2271.1
Minimum Education: High school diploma
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **O I D**

Duties

The captain and first officer usually arrive at the air terminal about one hour before flight time to check enroute weather, prepare the flight plan and brief the crew. Once in the cockpit, they check emergency equipment, flight instruments, radios, electronic equipment and fuel load. After passengers board the plane and cargo is loaded, pilots conduct final instrument checks.

Take-off, climb-out, descent and landing require concentration on complex procedures and the ability to make logical decisions quickly. In the air, pilots:

- make periodic position reports
- calculate and revise flight plans as necessary
- enter data in the aircraft log book
- monitor aircraft systems
- monitor air traffic control for traffic information, clearances and weather information
- make announcements regarding the flight on the public address system.

Pilots' specific duties vary according to the type of aircraft and the length and nature of the flight.

Working Conditions

All airline pilots must work on weekends and holidays. In most airlines, pilots spend approximately 75 hours a month in the air plus preparation time on the ground. They may be assigned blocks of flight times (one to three month schedules) according to seniority and required to work reserve duty with rotating days on call and days off.

Smaller charter airlines fly on an unscheduled demand basis so working hours can be very irregular. Charter and corporate flying may involve long periods of waiting and require extended periods away from home.

Pilots spend much of their time in cramped aircraft cockpits and are sometimes exposed to dangerous situations.

Personal Characteristics

Pilots need the following characteristics:

- good spatial perception
- good motor co-ordination
- leadership qualities
- the ability to work well with others in a team.

They should enjoy operating aircraft and related equipment, evaluating aircraft performance and directing the work of others.

Educational Requirements

(section revised JUNE 2005)

Pilots should have **at least a high school diploma** with good standing in mathematics and physics and be fluent in spoken and written English. A university degree, or a college or technical diploma is a definite advantage. Fluency in French is also an asset.

Airline pilots usually are between 20 and 35 years of age when they start employment with an airline. Major airline companies require vision corrected to 20/20. Family and personal medical history should be good with no mental or physical problems which would interfere with the safe handling of an aircraft. Airline pilots must be in top physical condition to pass the annual Transport Canada physical examination.

The **minimum licensing requirement** for airline pilots is a Canadian Commercial Pilot's Licence with night endorsement, instrument flight rating and a Canadian Radio Telephone (Restricted) Licence. Some airlines require, and others prefer to hire, pilots who have:

- an Airline Transport Pilot's Licence with multi-engine endorsement and Class I Instrument Rating
- several thousand hours of flying experience
- an advanced training ground school course on aviation subjects or related post-secondary education
- previous commercial flying experience.

Training programs are offered by private flying clubs and schools throughout Alberta. The cost for a qualified instructor and plane rental varies.

The following institutions offer airplane pilot or aviation programs from which students can graduate with a commercial pilot's licence and multi-engine instrument rating:

- **Adventure Aviation** in Grande Prairie
- **Aircraft Services (Lloydminster Ltd.)**
- **Bar XH Air Inc.** in Medicine Hat
- **Border City Aviation Ltd.** in Lloydminster
- **Calgary Flight Training Centre** in Calgary
- **Calgary Flying Club** in Calgary
- **Centennial Flight Centre Ltd.** in Edmonton
- **Cooking Lake Aviation Academy Inc.** in Sherwood Park
- **Edmonton Flying Club** in Edmonton
- **Excel Flight Training Inc.** in Lethbridge
- **Fly Right Ltd.** in Calgary
- **Frontier Flying Ltd.** in Cold Lake
- **LFC Flight Centre (2000) Inc.** in Lethbridge
- **McMurray Aviation** in Fort McMurray
- **Morgan Air Services Co. Ltd.** in Calgary
- **Mount Royal College** in Calgary
- **Mountain Air Flight Center** in Rocky Mountain House
- **Namao Flying Club**
- **Northern Alberta Institute of Technology (NAIT)** in Edmonton
- **Prairie Bible College** in Three Hills
- **Red Deer College** in Red Deer
- **Sky Wings Aviation Academy** in Penhold and Okotoks
- **Springbank Aero Flight Training Inc.** in Calgary
- **Springbank Air Training College Ltd.** in Calgary
- **Weber Aviation Inc.** in Lac La Biche
- **Wetaskiwin Air Services Ltd**. in Wetaskiwin.

Flying clubs and schools generally require applicants for commercial pilot training to have a private pilot's license, meet all Transport Canada requirements including a Category 1 Aviation medical and be at least 18 years of age prior to taking the test. The entrance requirements for college and technical institute programs also include a high school diploma with English 30 and Pure Math 30. Physics 30 is recommended.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

After they are employed, airline pilots must continue to study operating manuals to keep up to date with improvements to

facilities, equipment and procedures. They are also required to complete practice and check flights, in flight simulators and aircraft, at regular intervals to requalify for their licences.

Employment and Advancement

(section revised JANUARY 2006)

Pilots must acquire the required flying experience before they are eligible for airline pilot positions. Competition for airline positions is keen. Prospective pilots should be willing to relocate to find employment.

In major airlines, starting pilots must complete a three to four month course before they are assigned to a pilot base. They generally start as second officers on heavy aircraft such as a B-747, DC-10, L-1011 or DC-8, or as first officers on medium or short-range aircraft such as a DC-9, B-737 or A-320. Promotions depend upon ability and seniority. Opportunities for advancement to executive positions are limited and require business education.

Airline pilots are part of the larger National Occupational Classification 2271: Air Pilots, Flight Engineers and Flying Instructors. In Alberta, over 75 per cent of people employed in this classification work in the **Transportation and Warehousing** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Transportation and Warehousing industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 2,050 Albertans are employed in the Air Pilots, Flight Engineers and Flying Instructors occupational group which is expected to grow 1.4 to 2.4 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 20 to 50 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since airline pilots form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for airline pilots.)

Employment turnover is generally low in this occupation but is expected to increase as members of the baby boom generation retire.

Salary

(section revised OCTOBER 2005)

Salaries increase after completion of the initial training, with years of experience, and according to other factors such as aircraft gross weight and overseas differential. Other employee benefits vary depending on the company.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Air Pilots, Flight Engineers and Flying Instructors occupational group working part-time or full-time earned from **$20,200 to $131,000 a year.** The average salary was **$52,100 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

Air Transport Association of Canada website: www.atac.ca

Related Occupational Profiles

Air Traffic Controller
Canadian Forces Personnel - Commissioned Officer
Helicopter Pilot

Related High School Subjects

Language Arts; Languages (other than English); Mathematics; Physical Education; and Science (Physics)

Related Post-Secondary Fields of Study

Aviation

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Airline Ticket Agent

Produced OCTOBER 2003

Airline ticket agents make reservations and sell tickets to passengers travelling by air.

NOC Number(s): 6433.1
Minimum Education: High school diploma
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **M S O**

Duties

Airline ticket agents' duties and responsibilities vary from one airline to another but, in general, they:

- provide information over the phone or in person regarding routes, schedules and fares
- process passenger flight reservations and issue tickets
- prepare boarding passes at airports, check baggage, announce flights and assist passengers who have special needs.

They may also arrange for cargo shipments or provide related customer services for airline passengers.

Working Conditions

Airline ticket agents work shifts (including evenings, weekends and holidays) with rotating days off. During vacation seasons and around holidays, they may be required to work overtime.

At airport ticket counters, the work environment can be hectic and some customers are difficult to deal with, especially when poor weather conditions cause delays.

Personal Characteristics

Airline ticket agents need the following characteristics:

- a well-groomed and friendly appearance
- a good speaking voice
- good communication skills
- the ability to remain tactful and courteous at all times.

They should enjoy having clear rules and organized methods for their work, talking to people and operating equipment.

Educational Requirements

Airline ticket agents must have Transport Canada security clearance. Employers prefer to hire applicants who have a **high school diploma or related experience** in clerical, sales or related public contact positions. The ability to speak other languages, a good knowledge of geography, keyboarding and computer skills, previous airline experience or post-secondary courses in travel and tourism are definite assets when applying for employment. Some employers require job candidates to be able to communicate fluently in both English and French.

Airline companies may require successful job applicants to attend a training session ranging in length from three to seven weeks. New employees may be required to relocate wherever the company needs staff.

Employment and Advancement

(section revised JANUARY 2006)

Airline ticket agents are employed by airline companies, usually in or near urban centres. Competition for airline ticket agent positions is often keen. New employees usually work in casual or part-time positions in call centres. They may transfer to airports or ticket offices when they have sufficient seniority.

Airline ticket agents may advance to supervisory positions (e.g. customer service manager, cargo manager or reservation manager). However, competition for such positions is usually keen and there are few other advancement opportunities.

Airline ticket agents are part of the larger National Occupational Classification 6433: Airline Sales and Service Agents. In Alberta, most people employed in this classification work in the **Transportation and Warehousing** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Transportation and Warehousing industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 1,900 Albertans are employed in the Airline Sales and Service Agents occupational group which is expected to grow 1.5 to 2.5 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 20 to 50 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since airline ticket agents form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for airline ticket agents.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Salaries and employee benefits for airline ticket agents vary considerably from one employer to another. Employers may offer shift work premiums, irregular shift premiums or reduced airfares.

According to the **2005 Alberta Wage and Salary Survey**, Albertans working part-time or full-time in the Airline Sales and Service Agents occupational group earned **up to $52,800 a year.** Those with three years of experience earned from **$25,000 to $40,800 a year.** The average salary was **$36,600 a year**.

Related Occupational Profiles

Bus Line Ticket Agent
Call Centre Agent
Cashier
Flight Attendant

Related High School Subjects

Communication Technology; Cosmetology Studies; Language Arts; Languages (other than English); Logistics; Social Studies; and Tourism Studies

Related Post-Secondary Fields of Study

Clerical and Administrative Support

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Animal Care Attendant

Produced FEBRUARY 2005

Animal care attendants feed, clean and generally care for animals in animal shelters, stables, kennels, pet shops, aquariums, zoos and wildlife parks.

NOC Number(s): 6483
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **M O D**

Duties

Duties vary depending on the type of animal but, in general, animal care attendants:

- clean and disinfect enclosures (e.g. pens, cages, aquariums, kennels, stalls) by removing feces, soiled bedding and left-over food, and washing floors, walls, windows, etc.
- spread fresh straw, paper, sawdust, gravel or other bedding materials
- keep cleaning tools (e.g. shovels, rakes, garbage cans) clean and in good repair
- feed and water animals according to a daily schedule
- observe animals and report any unusual behaviour or health concerns
- groom, trim, bathe and clip animals to maintain hygiene, comfort and appearance
- dust, spray or bathe animals to control insect pests
- help to administer treatments prescribed by veterinarians
- keep records.

Animal shelter, dog pound and wildlife rehabilitation facility attendants care for stray dogs, cats, other pets and wildlife as well as those surrendered by their owners. In addition to providing general care, they may:

- answer inquiries from the public
- contact dog and cat owners to inform them that their pets are at the shelter or dog pound
- assist in destroying unclaimed and unadoptable animals
- adopt out unclaimed animals after a specified waiting period or release rehabilitated wildlife.

Aquarists work in aquariums where they:

- feed and care for fish and other aquatic life
- clean aquariums and keep them in good working order
- maintain water quality for a variety of species of aquatic life
- check the chemical content, oxygen level and temperature of the water in the tanks
- add appropriate chemicals to the water when required or report their findings to other staff
- provide information about the aquarium to the public.

Grooms and stable workers care for horses at riding stables, horse farms and racetracks. In addition to the general care described above, they:

- exercise horses
- assist with basic training, breeding and foaling
- transport horses from one racetrack or competition to another
- act as trail guides
- clean and repair riding, jumping and racing equipment.

Kennel attendants care for dogs, cats and other pets which are being boarded, or bred and sold to the public. In addition to providing general care, they:

- exercise dogs
- answer inquiries from the public
- assist with the breeding and birthing of pedigreed dogs and cats.

Pet shop attendants work in retail stores where they care for and sell may different species of birds, fish, reptiles, cats, dogs, hamsters, guinea pigs, gerbils, monkeys and other animals and:

- sell pet supplies, pet accessories and related literature
- answer inquiries regarding pet care and pet supplies
- advise customers regarding choice of pet.

Zookeepers/wildlife park attendants care for animals in zoos and wildlife parks. They are usually assigned to a particular section of the zoo or park where they:

- assist other workers in transferring, restraining, crating and uncrating animals
- train animals
- make minor repairs on cages, settings and living areas
- watch for births, breeding and unusual behaviour, and record their observations in logbooks
- answer visitors' questions, advise people not to feed animals and warn them to be cautious around potentially dangerous animals.

Working Conditions

Animal care attendants may work entirely indoors in laboratories, animal shelters and pet shops, or they may work both indoors and outdoors in all weather conditions at kennels, stables, racetracks, aquariums, zoos or wildlife parks. No matter where they work, attendants must be able to tolerate unpleasant odours and not mind getting dirty. They may be required to restrain animals as well as lift and carry light (up to 5 kilograms) to heavy animals and cages (over 25 kilograms). Since attendants frequently handle animals, there is a risk of occasionally being bitten or scratched, or catching a disease that can be transfered from animals to humans.

Animals need daily care so most attendants work shifts including weekends and holidays.

Personal Characteristics

Animal care attendants need the following characteristics:

- reliable and alert
- gentle, quiet and patient with animals
- the ability to control animals
- physically fit and no allergies to animals
- good observational skills
- written communication skills.

Attendants who have regular public contact should enjoy dealing with people. Pet shop attendants must have an aptitude for sales.

Animal care attendants should enjoy having clear rules and guidelines for their work, and caring for animals.

Educational Requirements

Most employers prefer to hire attendants who have **previous animal care experience** in a work situation or with farm animals or pets. Some employers also require related training or post-secondary education.

- Some aquariums, zoos and wildlife parks require post-secondary education in the biological sciences, animal husbandry or a related field.
- Dog kennel staff must be knowledgeable about behaviours and problems with specific breeds.
- Dog pounds prefer to hire attendants who have some post-secondary education related to bylaw enforcement. (For more information, see the Bylaw Enforcement Officer occupational profile.)
- Employers of aquarists may require job candidates to have basic knowledge in the use and handling of hazardous chemicals (e.g. chlorine), some knowledge of plumbing and pool filtration systems, or certified scuba skills.

Regardless of whether they require previous experience, formal training or both, employers of animal care attendants usually provide some on-the-job training. Training programs also may be available through related associations.

The following colleges offer post-secondary programs and continuing education courses that are directly related to animal care:

- **Lakeland College** in Vermilion
- **Lethbridge Community College**

- **Olds College.**

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites. For information about Animal Health Technology programs in particular, see the Animal Health Technologist occupational profile.

Continuing education programs are often offered on an as needed basis.

Employment and Advancement

(section revised JANUARY 2006)

Employment opportunities for some animal care attendants are limited in Alberta. There are very few employers of aquarists, zookeepers, wildlife park attendants, animal shelter or dog pound attendants in the province. More opportunities exist for grooms, kennel attendants and pet shop attendants.

One way to get started in the field and gain the necessary experience is to do volunteer work or look for short-term employment during busy times such as spring and summer months or holidays periods when many employers of animal care attendants require additional staff.

Advancement possibilities are limited for many animal care attendants. Animal shelter or dog pound attendants, aquarists and zookeepers or wildlife park attendants may advance to supervisory positions. With experience and on-the-job training, grooms may become assistant trainers, trainers, drivers, barn foremen or, possibly, race secretaries or judges. Kennel attendants who are trained on the job to groom may become pet groomers (see the occupational profile Pet Groomer). With experience, kennel attendants and pet shop attendants may eventually become managers or start their own businesses.

Animal care attendants are part of the larger National Occupational Classification 6483: Pet Groomers and Animal Care Workers. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Repair, Maintenance, Personal and Other Services**
- **Professional and Technical Services**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

About 2,100 Albertans are employed in the Pet Groomers and Animal Care Workers occupational group which is expected to grow 1.0 to 2.0 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 20 to 50 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since animal care attendants form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for animal care attendants.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Salaries vary widely depending on the type of animal and the employer.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Pet Groomers and Animal Care Workers group working part-time or full-time earned from **$10,100 to $36,700 a year.** The average salary was **$15,300 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Related Occupational Profiles

Animal Health Technologist
Farrier
Pet Groomer
Swine Technician

Related High School Subjects

Agriculture; Physical Education; Science (Biology; and Chemistry); and Tourism Studies

Related Post-Secondary Fields of Study

Agriculture and Related Technologies; Sciences; and Social, Community and Protective Services

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For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Animal Health Technologist

Produced FEBRUARY 2005

Animal health technologists provide primary support to veterinarians by caring for animals, and assisting in the diagnosis and treatment of companion and livestock animal health disorders.

NOC Number(s): 3213
Minimum Education: 2 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **M O I**

Duties

Animal health technologists provide a wide range of animal health services under the supervision of veterinarians. In general, their duties include:

- emergency first aid
- collecting and preparing laboratory specimens for testing
- performing blood, urine, fecal and other routine laboratory tests
- filling prescriptions and administering prescribed medications and treatments
- receiving and preparing animals for examination or surgery
- monitoring clinical symptoms
- assisting veterinarians in surgically-related operations
- anesthetic induction and monitoring
- producing and developing radiographs
- performing dental cleaning
- restraining animals
- providing nursing care and rehabilitation therapy for animals
- implementing radiation safety and quality control procedures
- providing health care guidance to owners (e.g. regarding behaviour problems in pets, animal nutrition)
- assisting in the euthanasia and aftercare of animals
- cleaning, maintaining and sterilizing surgical and medical instruments and equipment
- pharmaceutical and product inventory management
- ensuring facility sanitation to control the spread of disease
- assisting in food animal monitoring programs
- maintain medical records and log books.

Animal health technologists also may have other responsibilities such as:

- writing reports
- recommending and selling products
- maintaining inventories of supplies
- maintaining research information
- reception, accounting and invoicing duties.

Working Conditions

Most animal health technologists are employed in veterinary clinics and hospitals, laboratories, research facilities and animal shelters. Some are employed by pharmaceutical and private companies, or work outdoors on farms, stockyards and feedlots.

Hours of work vary and may include weekends, nights, emergency on-call rotations or overtime to assist in emergencies. The work can be physically demanding. Depending on the work situation, animal health technologists may be required to lift up to or over 25 kilograms.

Animal health technologists sometimes have to work around strong, unpleasant odours. Occupational hazards include contact with potentially dangerous animals and potential exposure to radiation, biohazardous substances and waste, anesthetics (gases) and diseases that may be transmissible to human beings.

Personal Characteristics

Animal health technologists need the following characteristics:

- the ability to work quickly and decisively under pressure
- good manual dexterity
- an aptitude for math, record keeping and writing reports
- excellent communication and interpersonal skills
- good organization skills
- good physical health and strength
- a high degree of integrity.

They should enjoy having clear rules and guidelines for their work, and performing laboratory and diagnostic procedures.

Educational Requirements

Animal health technologists must have **a two year Animal Health Technology/Veterinary Technology diploma** accredited by the Canadian Veterinary Medical Association. In Alberta, the following institutions offer two year diploma programs in Animal Health Technology:

- **Lakeland College** in Vermilion. The entrance requirement is a high school diploma or equivalent with English Language Arts 30-1 or English 30 (or at least 65 per cent in ELA 30-2 or English 33), Chemistry 30 and at least 60 per cent in Biology 30 and Pure Math 20, Math 20, Applied Math 30 or Math 33. Applicants must complete a career investigation report and have 80 hours of voluntary or paid work experience in a veterinary clinic.
- the **Northern Alberta Institute of Technology (NAIT)** in Edmonton and Fairview. The entrance requirement for the Edmonton program is a high school diploma or equivalent with English 30 or 33, Math 30 (Pure or Applied), Chemistry 30 and Biology 30. A career investigation report is required. Success in the program requires computer literacy.
- **Olds College**. This program includes 14 months at Olds College, two months of work experience and one month at the Western College of Veterinary Medicine in Saskatoon. The entrance requirement is a high school diploma or equivalent with at least 60 per cent in English Language Arts 30-1 or 30-2 (or English 30 or 33), Pure or Applied Math 30 (or Math 30 or 33), Chemistry 30 and Biology 30. A minimum of 80 hours of volunteer or work experience in a veterinary clinic must be completed within two years prior to admission.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Before enrolling in any program, prospective students should check with the **Canadian Association of Animal Health Technologists and Technicians** to make sure the program is recognized across Canada.

Other Requirements

In Alberta, membership in the Alberta Association of Animal Health Technologists (AAAHT) is required to work as an animal health technologist under the direction of a registered veterinarian. Graduation from an accredited Animal Health Technology diploma program and successful completion of an examination administered by the AAAHT are required for membership in the association.

Employment and Advancement

(section revised JANUARY 2006)

Animal health technologists may be employed by:

- private veterinary practices
- zoos, wildlife parks and rehabilitation centres
- biomedical research laboratories
- kennels, animal shelters and humane societies
- the Canadian Forces
- government departments and food inspection agencies (see the Agricultural Commodity Inspector occupational

profile)
- pet shops
- companies that sell animal care or pharmaceutical supplies
- farms and feedlots
- post-secondary institutions.

Animal health technologists may progress to positions of greater responsibility.

Animal health technologists are part of the larger National Occupational Classification 3213: Veterinary and Animal Health Technologists and Technicians. In Alberta, over 75 per cent of people employed in this classification work in the **Professional and Technical Services** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:
- trends and **events** affecting overall employment (especially in the Professional and Technical Services industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 650 Albertans are employed in the Veterinary and Animal Health Technologists and Technicians occupational group which is expected to grow 1.4 to 2.4 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Veterinary and Animal Health Technologists and Technicians occupational group working part-time or full-time earned from **$14,200 to $44,200 a year.** The average salary was **$33,400 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Association of Animal Health Technologists (AAAHT) website: www.aaaht.com

Canadian Association of Animal Health Technologists and Technicians (CAAHTT) website: www.caahtt-acttsa.com

Related Occupational Profiles

Agricultural Commodity Inspector
Animal Care Attendant
Pet Groomer
Veterinarian

Related High School Subjects

Agriculture; Financial Management; Language Arts; Management and Marketing; Mathematics; Physical Education; and Science (Biology; and Chemistry)

Related Post-Secondary Fields of Study

Agriculture and Related Technologies

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Animator

Produced MAY 2005

Animators create the illusion of movement by manipulating sequences of still images. They may use a variety of materials and techniques including computer software, drawings on paper and three-dimensional sculptures.

NOC Number(s): 5241.1
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: I M S

Duties

Animators work on visual productions such as short and feature length films, television series, educational films, commercials and computer games. They may work independently or as part of a small team of animators on projects of their own creation, or they may work in the feature film, computer game or television departments of large animation studios.

Animators working on their own films:

- develop an initial concept or story idea
- sketch a storyboard (visual script) for the project
- create a dialogue (voice) track for the film (if desired)
- break down the soundtrack frame-by-frame
- digitally create, draw or build characters, sets and graphics
- assemble images digitally or film drawings, puppets or cutouts one frame at a time
- edit scenes together, matching them to the soundtrack
- edit in and mix additional tracks including music and sound effects
- market animations by screening finished films at local film co-operatives or cinemas, broadcasting animations on the Internet, entering animations in film festivals or showing them directly to broadcasters, film distributors or computer game developers.

Animators in large studios work within a director's guidelines and only on specified parts of a production. In general:

- the story department develops the concept
- the character designer designs the characters
- the art director creates the look of the film
- animators in the layout department (layout artists) create the technical plans for each scene
- animators in the storyboard department (storyboard artists) draw the script
- the director and sound editor are responsible for the soundtrack (planning during pre-production and editing during post-production).

Animators may specialize in one or more of the following types of animation:

- character
- settings or environments
- special effects
- titles or credits.

They also may specialize in techniques such as:

- cutouts
- clay or plasticine
- silhouettes
- rotoscoped drawings (traced from live action)
- pixillation (frame-by-frame movement of people and objects in a live action setting)
- computer-generated sequences integrated into film or video.

Animators usually specialize in two-dimensional (2D) or three-dimensional (3D) animation. 2D animation is an evolution of traditional cell or character animation, and may employ a wide variety of art materials and styles. 3D animation is often created with computer programs that add gravity, texture and other realistic effects.

Working Conditions

Animators often sit for long periods of time but, to really understand the movement they are creating, may regularly get up to act out their characters in front of a mirror or in front of colleagues. They work under the pressure of constant deadlines; 60-hour work weeks are not uncommon.

Personal Characteristics

Many animators work on a freelance or contract basis and therefore must be able to:

- promote themselves and market their talent
- adapt their artistic style to different studios and different clients
- convey their ideas to others
- work well with others as members of a team.

Animators should enjoy synthesizing information, finding innovative approaches, taking a methodical approach to tasks requiring precision (e.g. preparing specifications, estimating costs) and consulting with clients.

Educational Requirements

Animators are hired on the basis of:

- a strong "demo reel" of previous animation work
- strong colour theory, compositon and life-drawing skills as demonstrated in portfolios of their work
- ability to work quickly and meet deadlines.

Animators, including computer animators, need **fine art or graphic design training at the post-secondary level**. For information about related post-secondary programs in Alberta, see the Painter/Printmaker, Graphic Designer, Interactive Media Developer and Web Designer occupational profiles. The following post-secondary institutions offer programs directly related to animation:

- The **Alberta College of Art and Design** in Calgary offers a four year Bachelor of Fine Arts degree program in Media Arts and Digital Technologies. Applicants must have completed first year at the college (or equivalent education) with a grade point average (GPA) or at least 2.67/4. Applicants must also have an average of at least 70 per cent in English 30, Math 30 or Pure Math 30, a 30-level science (Physics 30 recommended), and Social Studies 30 or a 30-level Fine Arts option.
- **DevStudios**, a private vocational school in Edmonton, offers a 36 week 3D Animation and Digital Compositing program. The entrance requirement is a high school diploma or equivalent.
- **Sprott-Shaw Community College**, a private vocational school in Calgary, offers a 45 week Digital Animation program. Contact the school for entrance requirements.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Elsewhere in Canada, the following institutions offer animation programs:

- **Algonquin College** in Ottawa
- **Capilano College** in North Vancouver
- **Concordia University** in Montreal
- **Emily Carr Institute of Art and Design** in Vancouver
- **New Brunswick Community College** in Mramichi
- **Nova Scotia Community College** in Truro
- **Seneca College** in Toronto
- **Sheridan College** in Oakville

Admission requirements for these programs vary but, in general, include a high school diploma with English 30 (or equivalent) and appropriate samples of the applicant's art work. Competition for admission is often keen. Applicants are selected on the basis of their academic transcripts, submitted art work and an assessment of their suitability for the program.

Many post-secondary institutions offer individual courses in animation through Continuing Education. In Calgary, the **Quickdraw Animation Society** offers regular courses on various media and occasional workshops on special topics.

Before enrolling in any program, aspiring animators should discuss their training options with potential employers. Some major animation studios offer their own in-house training programs.

Employment and Advancement

(section revised JANUARY 2006)

Many animators start by taking a course from their local university or college. Some are then able to go on and apprentice at a local production studio. Another alternative is to seek out workshops and projects at film and video co-operatives.

Almost all animation work is freelance, paid on a contract basis. Most opportunities for animation work are found in larger cities where there is a lot of film, television and CD-ROM production (e.g. Vancouver, Toronto, Montreal). Many professional animators travel from city to city, working on short-term contracts.

Animators may work for:

- film and video production companies or post-production houses
- independent filmmakers
- television stations
- advertising companies
- computer game developers
- other computer-based multimedia developers or producers.

Many animators must supplement their income from animation with income from other work (eg. teaching, illustration, camera work).

Animators are part of the larger National Occupational Classification 5241: Graphic Designers and Illustrators. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Professional and Technical Services**
- **Information, Culture and Recreation**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

About 6,950 Albertans are employed in the Graphic Designers and Illustrators occupational group which is expected to grow 1.6 to 2.6 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 110 to 180 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since animators form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for animators.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

In Canada, animators negotiate each contract separately. Their incomes can vary greatly from one animator to another, and from one year to another.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Graphic Designers and Illustrators occupational group working part-time or full-time earned from **$15,800 to $92,600 a year.** The average salary was **$37,200 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Digital Games Research Association (DGRA) website: www.digra.org

Quick Draw Animation Society (QAS) website: www.awn.com/qas

ASIFA (International Animated Film Association) - Hollywood website: www.asifa.com

Related Occupational Profiles

Cartoonist
Graphic Designer
Illustrator
Interactive Media Developer

Related High School Subjects

Communication Technology; Enterprise and Innovation; Fine Arts (Visual Arts); Language Arts; Mathematics; Science (Physics); and Social Studies

Related Post-Secondary Fields of Study

Computer and Information Technology; and Fine Arts and Performing Arts

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For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Announcer

Produced MAY 2003

Announcers read news, sports, weather, commercial and public service messages, and host live events as well as entertainment and information programs for broadcast on radio or television.

NOC Number(s): 5231
Minimum Education: 1 year post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **M S I**

Duties

Depending on the station and the market it serves, announcers may specialize in a particular type of work or share the following tasks with other station personnel. However, in general, radio and television announcers:

- research and write their own material (completely or in part)
- prepare stories for later broadcast (especially sports and news reporters)
- develop longer feature stories for local audiences
- read commercials and public service messages.

Announcers may also:

- operate control boards and other equipment for complex productions or programs
- run programming "on air" according to station schedules
- rewrite copy from wire services
- edit and read news, sports and weather reports at regular intervals.

Announcers are often invited to make public appearances or to serve as the master of ceremonies at special events. They may also broadcast live from commercial businesses or shopping malls, or be asked to judge contests.

Between music selections, **announcers who host music programs** on commercial radio stations:

- comment on the music, local events and interest stories
- use humour, small talk and background information to fill spaces
- offer giveaways and prizes to listeners
- follow a predetermined schedule for airing commercials
- answer calls from listeners.

In most radio stations, computer software programs are used to schedule the music for each radio program. In some stations, announcers play special listener requests.

When music announcers are off air, they record commercials for later broadcast, preview new music and prepare material for later shows. They also host local station and charity events, and participate in station promotions.

Talk show hosts and interviewers host radio and television shows that feature discussions with a variety of guests on topics of interest to the general public. Listeners may talk to guests live during the show and voice their own opinions about the topic. Most talk shows are recorded live in a radio or television station.

Talk show hosts and interviewers must research topics before going on air to talk about them.

Sportscasters are radio and television announcers who specialize in sports broadcasts. In general, they:

- attend press conferences to gather sports information
- cover live sporting events
- broadcast live play-by-play commentary
- interview players, coaches and owners for comments and reactions.

Sportscasters prepare their stories on computer terminals, working from material gathered from wire services and adding their own information. Sometimes, they host sports programs that feature interviews with sports figures or review recent or upcoming sporting events.

At regular intervals during the day and evening, sportscasters provide sport reports. These reports may be taped or broadcast live.

News broadcasters (newscasters and reporters) gather, organize and report the news. For more information, see the Reporter occupational profile.

Working Conditions

Announcers generally work shifts that often include evenings, weekends and holidays and may include early mornings or late nights. Sports announcers often work irregular hours or split shifts because their schedules are determined by sporting events. The work can be stressful because live broadcasting allows little room for error.

Announcers may work in comfortable, although sometimes crowded, studios or in broadcast booths at various locations.

Personal Characteristics

Announcers need the following characteristics:

- pleasant-sounding voices
- good enunciation
- a good command of the English language
- the ability to accurately pronounce foreign names
- excellent writing and reading skills
- self-confidence
- the ability to "ad lib " and provide interesting small talk
- the ability to relate to an audience
- a high level of interest and enthusiasm.

They should enjoy working with music, videos and other entertainment materials for broadcast, entertaining others and compiling information.

Educational Requirements

(section revised MARCH 2005)

Announcers must be able to write clearly and concisely, and keep up to date on current events. Interviewers must be able to guide discussions in a direction that is interesting and informative. Computer skills are a definite asset, especially with regard to digital on-air and sound editing systems.

Most announcers have **related post-secondary education**. In Alberta, the following post-secondary institutions offer related programs:

- The **Banff Centre for the Arts** offers short Television and Video programs. Applicants must be experienced in television production and provide samples of their work, two letters of reference and a statement of objectives.
- The **Canadian School of Modern Broadcasting,** a private vocational school in Edmonton, offers a 17 week Radio Broadcasting program that includes a four week work placement in the school's simulated radio station. The entrance requirement is a high school diploma or equivalent with at least 60 per cent in English 30 or 33, or equivalent and a personal interview.
- **Grant MacEwan College** in Edmonton offers a two year Journalism diploma program. The entrance requirement is a high school diploma with at least 65 per cent in English 30, Social Studies 30 and Math 33. Applicants must complete a Journalism Aptitude and Proficiency Test and a 400 word career report. Grant MacEwan College may also offer a Native Communications program.
- **Lethbridge Community College** offers a two year Communication Arts diploma program. The entrance requirement is a high school diploma with at least 60 per cent in English 30 (70 per cent in English 33) at least 60 per cent in Social Studies 30. An interview and a 500 word composition are also required.
- **Mount Royal College** in Calgary offers a two year Broadcasting diploma program. The entrance requirements include a high school diploma or equivalent, keyboarding skills, a portfolio, departmental testing and an interview.
- The **Northern Alberta Institute of Technology** in Edmonton offers a two year Radio and Television Arts diploma program with specializations in radio and in television. The entrance requirement is a high school diploma or equivalent with at least 60 per cent in English 30 or 33, and at least 50 per cent in Grade 11 math, science and social studies (Grade 12 math, science and social studies recommended). This is a quota program and competition for admission is keen. A career investigation report is required.

- The **Southern Alberta Institute of Technology** in Calgary offers a two year Cinema, Television, Stage and Radio diploma program with specializations in broadcast news, film/video, radio and television. The entrance requirement is a high school diploma or equivalent with at least 60 per cent in English 30 or 33. Typing skills are essential. A resume/portfolio, research paper and an interview may be required. SAIT also offers a two year Broadcast Technology diploma program. The entrance requirement is a high school diploma or equivalent with English 30 or 33 and Pure or Applied Math 30 or 33.
- The **University of Calgary** offers a four year Bachelor of Arts (BA) degree program and a five year BA (co-operative education) degree program in Communication Studies (in conjunction with SAIT). The entrance requirement is a high school diploma with an average of at least 60 per cent in English 30, Math 30 or 31 and three other appropriate Grade 12 subjects (French 30, 30S, 30N, Francaise 30 or French Language Arts 30 strongly recommended).

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

(section revised JANUARY 2006)

Announcers usually find work by marketing themselves through audition tapes and personal interviews. Aspiring announcers must be willing to start at small radio and television stations, usually in rural communities. Larger stations usually hire experienced announcers.

At small stations, announcers may host music shows and read news, weather and sports reports as well. Sometimes, they are also involved in writing commercial advertisements and selling air time.

Experienced announcers usually specialize in music, news, sports or interviewing. Movement from station to station is common as announcers seek positions with larger audiences or return to smaller stations in management positions. Announcers may become programming directors, station managers, news anchors or directors or executives with broadcasting companies.

Some announcers freelance as masters of ceremonies or disc jockeys for special functions, or record commercials on a contract basis.

Announcers are part of the larger National Occupational Classification 5231: Announcers and Other Broadcasters. In Alberta, over 75 per cent of people employed in this classification work in the **Information, Culture and Recreation** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Information, Culture and Recreation industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 850 Albertans are employed in the Announcers and Other Broadcasters occupational group which is expected to grow 1.0 to 2.0 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover. (**Note**: Since announcers form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for announcers.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Salaries for announcers vary tremendously.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Announcers and Other Broadcasters occupational group working part-time or full-time earned from **$12,300 to $88,000 a year.** The average salary was **$29,700 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Cultural Human Resources Council website: www.culturalhrc.ca

Related Occupational Profiles

Actor
Model
Reporter

Related High School Subjects

Communication Technology; Language Arts; Languages (other than English); Mathematics; and Social Studies

Related Post-Secondary Fields of Study

Communications

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Anthropologist

Produced NOVEMBER 2005

Anthropologists study the biological evolution of human beings and the nature of human societies and cultures.

NOC Number(s): 4169.1
Minimum Education: 4 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **I D M**

Duties

Anthropologists study all aspects of society and culture, past and present, including material possessions, traditions, beliefs, customs, languages, and patterns of subsistence and settlement. Their research may involve many different aspects of society (cultural beliefs and symbols, kinship and social organization, ethnicity, and religious, economic, political and legal aspects).

Anthropologists may specialize in particular geographic areas of the world, in particular populations in a locale or region, or in any of the following branches of anthropology:

- **Social and cultural anthropologists** study, compare and analyze socio-cultural information through close observation and contact with cultural, class or minority groups. For example, **medical anthropologists** study health-related beliefs and behaviours, the related history of disease, and the relationship between human health and the environment as indicated by such factors as nutrition and population changes. Social and cultural anthropologists try to study a society's concepts and world views without imposing concepts from their own cultural traditions.
- **Physical or biological anthropologists** may study the evolution of human physical characteristics as influenced by heredity and environment, or the behaviour and biology of non-human primates. Human remains are sometimes used in research. For example, **forensic anthropologists** assist police departments and pathologists in specialized forensic activities (for example, the identification of bone and tooth structures).
- **Linguistic anthropologists** study the development and everyday use of human languages and, in particular, modern language patterns and their influence on thought and action.
- **Applied anthropologists** look for practical solutions to particular problems in any of the above areas of anthropology. They may be employed by governments (for example, in immigrant or health services), industry (social impact assessments), First Nations (land claims or self-government research) or work as self-employed consultants.

Working Conditions

In urban settings, anthropologists' working conditions are usually quite pleasant and comfortable. However, anthropological research is sometimes conducted outdoors in severe weather conditions (extreme heat, cold or humidity), remote locations or foreign countries where environmental or personal risks may be high.

When they are doing field work, anthropologists may live in tents or in local housing and work long hours for extended periods of time. Their work can be slow and difficult.

Personal Characteristics

Anthropologists need the following characteristics:

- excellent reading, writing and research skills
- a natural curiosity about and a respect for other cultures
- a willingness to work in field conditions.

In some specializations, they also should be interested in blending social and natural science approaches to issues.

All anthropologists should enjoy gathering and analyzing data and finding innovative approaches to intellectual puzzles, consulting with and directing the work of others, and taking a methodical approach to reconstructing cultural records.

Educational Requirements

Anthropologists come from a variety of educational backgrounds. The minimum requirement for entry into this field is a bachelor's degree in a related discipline. Physical anthropologists require extensive training in human anatomy and biology.

Specialization in particular areas of anthropology generally requires a master's or doctoral (PhD) degree in anthropology. Research positions and teaching positions at the post-secondary level normally require a doctoral degree.

In Alberta, the following universities offer degree programs in anthropology:

- **Athabasca University** offers three and four year Bachelor of Arts (BA) degree programs in anthropology by distance education. Applicants must be at least 16 years of age.
- The **University of Alberta** in Edmonton offers a four year BA degree program in anthropology. The entrance requirement is a competitive average of 65 to 80 per cent in English Language Arts 30-1 (or English 30), a 30 level language other than English or Pure Math 30 (or Math 30), and three other approved 30 level subjects (Social Studies 30 recommended). The University of Alberta also offers Master of Arts (MA) and PhD programs in anthropology.
- The **University of Calgary** offers four year BA and Bachelor of Science (B.Sc.) programs in anthropology. The entrance requirement is a high school diploma or equivalent with a competitive average in English Language Arts 30-1 (or English 30), Pure Math 30 or Math 30 or 31, and three of the following: Biology 30, Chemistry 30, Physics 30, Science 30, Social Studies 30, a 30 level language other than English, one five-credit Grade 12 subject. The University of Calgary also offers MA and PhD degree programs in anthropology.
- The **University of Lethbridge** offers four year BA and Bachelor of Arts and Science programs, and five year combined degree programs in anthropology. The entrance requirement is an average of at least 65 per cent in English Language Arts 30-1 (or English 30), three other appropriate 30 level subjects and a fifth Grade 12 subject. The University of Lethbridge also offers an MA program in anthropology.

Post-secondary institutions throughout the province offer university transfer programs that allow students to apply up to two years of study toward university bachelor's degree programs. It is the student's responsibility to ensure that the courses they choose to take will be accepted for credit at the institution to which they wish to transfer.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

(section revised JANUARY 2006)

Most newly-graduated anthropologists are self-employed in business or contracted by government agencies. They may work for:

- museums as museum technicians and curators
- provincial and federal government departments involved in parks and historic site development, or cultural resources and public education
- private and public sector organizations that carry out market research, or social and historical research and impact assessments.

Due to very low employment turnover and a limited number of positions, employment and advancement opportunities are limited. There is a trend toward short-term, contract work rather than long-term employment with a single employer.

Anthropologists employed by universities are involved in teaching as well as field and laboratory research (for more information, see the University Professor occupational profile).

Anthropologists are part of the much larger National Occupational Classification 4169: Other Professional Occupations in Social Science. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Professional and Technical Services**
- **Public Administration**
- **Educational Services**
- **Health Care and Social Assistance**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 350 Albertans are employed in the Other Professional Occupations in Social Science occupational group which is expected to grow 1.5 to 2.5 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover. (**Note**: Since anthropologists form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for anthropologists.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Other Professional Occupations in Social Science occupational group working part-time or full-time earned from **$31,800 to $79,600 a year.** The average salary was **$54,900 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Canadian Sociology and Anthropology Association (CSAA) website: www.csaa.ca

Related Occupational Profiles

Archaeologist
Curator
Linguist
Museum Technician

Related High School Subjects

Language Arts; Mathematics; Science (Biology; and Chemistry); and Social Studies

Related Post-Secondary Fields of Study

Social Sciences, Law and Religious Studies

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Appliance Service Technician

Apprenticeship and Industry Training

Produced FEBRUARY 2006

Appliance service technicians install, service and repair household and commercial appliances such as ranges, ovens, clothes washers, dryers, freezers, refrigerators, microwave ovens, dishwashers, waste disposers and waste compactors.

NOC Number(s): 7332.1
Minimum Education: Apprenticeship Trade - Grade 10
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: O M i

Duties

Duties vary from one position to another but, in general, appliance service technicians:

- determine the source of the problem by consulting with the customer, referring to the manufacturers' service manuals and bulletins, or using specialized tools and testing devices
- disassemble the appliance, clean all internal parts and replace any faulty or worn parts
- reassemble the appliance and adjust and test that it is working properly
- answer customers' questions
- provide cost estimates
- advise customers on the correct use and care of appliances
- prepare work orders, complete billing reports and maintain records for parts inventories and future service calls.

Working Conditions

Appliance service technicians usually work alone with little supervision. Those who repair portable appliances work indoors at a workbench in a shop. Technicians who repair large appliances usually have to drive a truck with an inventory of parts and tools.

Appliance service technicians usually work a 40-hour week, but overtime may be required for emergencies or busy times of the year. Some work Saturdays and evenings to serve customers and the hours of work can vary considerably for those who are self-employed.

Physical demands vary depending on the size of appliance. Installing and servicing large appliances requires moving heavy items and a considerable amount of standing, stooping, kneeling and reaching. Benchwork is not as physically demanding. There is some risk of physical injury due to electrical shocks, cuts, burns and muscle strain.

Technicians may be required to lift items weighing over 25 kilograms.

Personal Characteristics

Appliance service technicians need the following characteristics:

- good mechanical aptitude and manual dexterity
- good eyesight and colour vision
- the ability to pay careful attention to details
- the ablility to keep up to date with changing technology
- a neat appearance
- good customer service skills.

They should enjoy problem-solving and working with their hands.

Educational Requirements

To work in Alberta, appliance service technicians must be registered apprentices or certified journeymen.

To **register** with **Alberta Apprenticeship and Industry Training**, apprentices must:

- have at least an Alberta Grade 10 education with a "B" standing in Math 13, Pure Math 10, Applied Math 10 and English 10 (or equivalent) or pass an entrance exam
- find a suitable employer who is willing to hire and train an apprentice. Most employers prefer to hire high school graduates and may select apprentices from among their current employees. Courses in math and physics are particularly important.

The **term of apprenticeship** is three years (three 12-month periods) that include a minimum of 1,600 hours of on-the-job training each year with eight weeks of technical training in the first and second year and six weeks of technical training in the third. High school students can become apprentices and gain credits toward apprenticeship training and a high school diploma at the same time through the Registered Apprenticeship Program (RAP).

Applicants who have related training or work experience may be eligible for credit or certification.

Appliance service technician apprentices may attempt the Interprovincial Exam in the final period of their apprenticeship training and, if successful, are granted a Red Seal (which is recognized in most parts of Canada).

Technical training is arranged by Alberta Apprenticeship and Industry Training and is currently offered at the Southern Alberta Institute of Technology (SAIT) in Calgary.

Pre-employment programs for prospective apprentices and continuing education programs for journeymen may be offered on an as needed basis by the institution(s) listed above or other schools.

Employment and Advancement

Appliance service technicians are employed by:

- appliance dealers
- independent appliance service companies
- department stores
- appliance manufacturers' service departments
- gas and electric utility companies
- owners of rented appliances.

Experienced appliance service technicians employed in larger organizations may become specialists or advance to supervisory positions such as foreman or service manager. Alberta certified journeyman appliance service technicians who have the supervisory or management skills required by industry may apply for an Achievement in Business Competencies Blue Seal by contacting Alberta Apprenticeship and Industry Training.

With experience and knowledge of how to run a small business, appliance service technicians may start their own independent appliance service companies or appliance sales and service outlets. They may also become factory service representatives employed by manufacturers to supervise authorized repair depots in a particular region.

Appliance service technicians are part of the larger National Occupational Classification 7332: Electrical Appliance Servicers and Repairers. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Repair, Maintenance, Personal and Other Services**
- **Retail Trade**
- **Construction**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 1,500 Albertans are employed in the Electrical Appliance Servicers and Repairers occupational group which is expected to grow 1.0 to 2.0 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 10 to 30 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since appliance service technicians form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for appliance service technicians.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Apprentice appliance service technicians earn at least 55 per cent of the journeyman wage rate in their place of employment in the first year, 70 per cent in the second and 85 per cent in the third. Journeyman wage rates for appliance service technicians employed in repair shops range from **$12 to $28 an hour plus benefits** (2005 estimate). According to the Alberta Provincial Apprenticeship Committee for this trade, journeymen who are self-employed or work on a commission basis may make more, depending on their skill and initiative.

According to the **2005 Alberta Wage and Salary Survey**, Albertans working part-time or full-time in the Electric Appliance Servicers and Repairers occupational group earned from **up to $77,200 a year.** The average salary was **$35,700 a year**.

Other Sources of Information

Alberta Apprenticeship and Industry Training website: www.tradesecrets.org

Related Occupational Profiles

Electrical Motor Systems Technician
Electronic Technician
Motorcycle Mechanic
Office Equipment Technician
Outdoor Power Equipment Technician
Recreation Vehicle Service Technician
Refrigeration and Air Conditioning Mechanic
Vending Machine Repairer

Related High School Subjects

Electro-Technologies; Language Arts; Mathematics; Mechanics; and Physical Education

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For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Arbitrator

Produced OCTOBER 2005

Arbitrators resolve disputes by hearing arguments and evidence, and rendering decisions that may be filed in a court of law and legally enforced.

NOC Number(s): 1121
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **I M S**

Duties

Arbitrators have responsibilities similar to those of judges but their "courtroom" can be anywhere. The place and arbitrator are usually chosen by the disputants (the people involved in the dispute).

In general, arbitrators:

- conduct an initial meeting with disputants to outline the arbitration process, settle procedural matters such as meeting locations or arbitration fees, and determine the number of witnesses and how much time resolving the dispute is likely to take.
- conduct hearings in which each disputant gets a chance to present arguments and evidence, call witnesses and cross-examine the other party's witnesses.
- assess the merits and validity of the arguments and evidence presented.
- write a decision which makes an award and states the reasons for the decision.

Arbitration may be used to settle disputes between management and labour, businesses and consumers, claimants and insurance companies, business partners, marriage partners or other parties. Arbitration is recommended over taking a dispute to court when:

- the disputants want to resolve the conflict quickly and relatively efficiently and cost-effectively
- the dispute involves complicated matters requiring an arbitrator who has expertise in a particular field
- the parties can agree to a schedule and guidelines for resolving the dispute
- the dispute involves confidential matters.

Arbitration gives disputants the opportunity to choose an arbitrator who has some expertise regarding the issues in dispute.

Working Conditions

Arbitration can be a formal process or it can be quite informal depending on the circumstances. Arbitrators may conduct hearings in board rooms, hotel conference rooms or anywhere else that is acceptable to all parties. Likewise, hearing dates and times are negotiated at the beginning of the process.

Personal Characteristics

Arbitrators need the following characteristics:

- a neutral, unbiased attitude
- good communication skills including listening skills and the ability to write decisions clearly, logically and concisely
- the ability to establish rapport with all kinds of people
- the intellectual ability required to deal with complex factual material, analyze problems, and identify and separate the issues involved
- good judgement.

They should enjoy synthesizing information to develop innovative approaches to conflict resolution, co-ordinating information, and dealing with people.

Educational Requirements

Although many arbitrators have a professional background, there are no specified minimum education requirements for arbitrators. However, arbitrators need:

- an appreciation of the principles of natural justice
- a working knowledge of contract law and evidence
- a thorough understanding of the Alberta Arbitration Act and other relevant legislation.

Expertise related to the nature of the dispute is an asset.

The Continuing Education or Extension Services departments of the following post-secondary institutions offer a certificate program in Conflict Management in co-operation with the **Alberta Arbitration and Mediation Society (AAMS)**:

- **Grande Prairie Regional College**
- **Grant MacEwan College** in Edmonton
- **Red Deer College**.

The AAMS program requires successful completion of 210 hours (30 days) of training including core and elective courses. Participants must successfully complete competency-based skill assessments in both negotiation and mediation. A two year time frame is recommended for completion of the program. There are no entrance requirements.

Mount Royal College in Calgary offers a Conflict Resolution certificate program through Continuing Education. This 220 hour program includes seven required courses and at least five optional courses. One of the two final assessments (Mediation or Negotiation) must be successfully completed. Applicants must be 18 years of age or older.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Other Requirements

The Alternative Disputes Resolution (ADR) Institute of Canada Inc. offers the designation Chartered Arbitrator (C.Arb.) to members who have related training and experience. In Alberta, the Alberta Arbitration and Mediation Society is the regional association of the Institute.

Employment and Advancement

Usually, arbitrators work in other occupations and contract their services as arbitrators when they are needed.

When people agree to take their dispute to arbitration, they must find a mutually acceptable arbitrator, preferably someone who has:

- training or experience in arbitration
- a good reputation for making sound, impartial decisions
- some knowledge of the subject area concerned in the dispute.

Disputants may obtain lists of suitable candidates from the Alberta Arbitration and Mediation Society or ADR Institute of Canada.

Procedures for appointing arbitrators vary. Disputing parties may choose a single arbitrator or a panel of three arbitrators. Or, if necessary, the court may appoint an arbitrator.

Salary

Arbitrators' fees are negotiated with disputants at the beginning of the arbitration process and **vary greatly.** Sometimes, arbitrators volunteer their time. Arbitrators who are lawyers, engineers, accountants or other professionals usually charge fees that are in line with their other professional fee structures.

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Arbitration and Mediation Society (AAMS) website: www.aams.ab.ca

Aternative Disputes Resolution (ADR) Institute of Canada website: www.adrcanada.ca

Related Occupational Profiles

Architect
Judge
Lawyer
Mediator

Related High School Subjects

Communication Technology; Energy and Mines; Enterprise and Innovation; Forestry; Language Arts; Legal Studies; Mathematics; Social Studies; and Wildlife

Related Post-Secondary Fields of Study

Business, Management and Administrative Studies; Social Sciences, Law and Religious Studies; and Social, Community and Protective Services

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For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Arborist

Produced MARCH 2005

Arborists maintain healthy trees, and treat or remove injured and diseased trees.

NOC Number(s): 2225.1
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **O M d**

Duties

Arborists' duties vary depending on where they are employed and their specialization. In general, however, they:

- prune trees to maintain tree health and improve structure
- evaluate trees for hazards and repair splitting or breaking branches by securing cables and braces to large limbs
- install lightning protection on trees
- diagnose and treat problems
- fertilize trees and provide advice on tree care
- remove trees, sometimes in confined spaces
- appraise the monetary value of trees
- plan and develop budgets for tree work
- provide information to the public
- supervise the work of tree crews or private contractors
- inspect work to ensure high standards
- provide related consulting services (e.g. tree care, hazard evaluation, inventory and appraisal).

Most arborists specialize in a particular area of tree care such as pruning, planting or tree health maintenance.

Working Conditions

Arborists use hand and power tools, specialized pruning tools and spraying equipment. They must observe safety precautions to avoid injury when working with tools and machinery, and dangerous chemicals. The work involves considerable physical exertion: climbing, bending and twisting, and lifting items weighing up to 25 kilograms.

Arborists generally work in urban settings in crews of two to six people. The work is performed primarily outdoors and, in many cases, work continues throughout the year. Long hours may be required in spring and summer, and after storms and emergencies.

Personal Characteristics

Arborists need the following characteristics:

- the strength, stamina and agility required to climb trees and lift heavy objects
- steady nerves and no fear of heights
- good co-ordination and manual dexterity
- a keen interest in arboriculture (tree care)
- mechanical aptitude
- the ability to communicate with other workers and the public.

They should enjoy operating equipment, analyzing information to determine appropriate treatment methods, and advising and directing the work of others.

Educational Requirements

Education and training requirements for arborists vary. Inexperienced employees who do not have related formal education may start as labourers or grounds workers and learn on the job. High school physics courses are an asset.

At least two or three years of extensive on-the-job training is generally required before an arborist is ready to lead a crew on some tasks. Employers may send employees to one or two day safety training courses on topics such as climbing techniques or aerial rescue.

Arborists should be skilled in the use of ladders, ropes, knots and climbing saddles. Since most emergency response units are not trained to remove an injured person from a tree, arborists should be familiar with aerial rescue and safety techniques.

In Alberta, **Olds College** offers a two year Horticulture diploma program with a specialization in arboriculture. The program provides a general horticultural background with specific courses in tree care, pruning and tree climbing plus on-the-job training. The entrance requirement is a high school diploma with at least 55 per cent in Chemistry 20, Biology 20, and Pure or Applied Math 20 (or equivalent). Previous experience in the industry is desirable but not essential. For current information about the program or mature student admission, please check the Olds College calendar or website.

Related short courses are also available:

- **Landscape Alberta Nursery Trades Association** in Edmonton offers a course in pruning
- **Lakeland College** offers a home study course in pesticide application.

Other Requirements

Arborists require special certification to work on trees near energized power lines. Through Olds College, the Industrial Vegetation Management Association of Alberta provides training for this certification.

Aborists who use pesticides to control pests must hold a Landscape Pesticide Applicator Certificate from Lakeland College.

Arborists who have at least three years of work experience can pursue certification by the International Society of Arboriculture through home study courses.

Employment and Advancement

(section revised JANUARY 2006)

Arborists are employed by:

- municipal, provincial and national parks departments
- firms that contract tree care services to government departments
- utility companies
- large institutions such as universities
- commercial or residential landscape management companies
- tree nurseries.

Advancement is based on the arborist's ability to keep up to date with new developments in the field and willingness to take on greater responsibilities. Arborists who have considerable experience and additional training may advance to technical management positions. Some establish their own companies or work as consultants.

Arborists are part of the larger National Occupational Classification 2225: Landscape and Horticultural Technicians and Specialists. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Management, Administrative and Other Support Services**
- **Professional and Technical Services**
- **Agriculture**
- **Information, Culture and Recreation**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- time of year (for seasonal jobs)
- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

About 1,050 Albertans are employed in the Landscape and Horticultural Technicians and Specialists occupational group which is expected to grow 1.5 to 2.5 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 10 to 30 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since arborists form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for arborists.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised SEPTEMBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Landscape and Horticultural Technicians and Specialists occupational group working part-time or full-time earned from **$14,600 to $83,100 a year.** The average salary was **$39,900 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Industrial Vegetation Management Association of Alberta (IVMAA) website: www.ivmaa.com

International Society of Arboriculture (ISA) Prairie Chapter website: www.isaprairie.com

Landscape Alberta Nursery Trades Association (LANTA) website: www.landscape-alberta.com

Related Occupational Profiles

Forest Technician
Landscape Architectural Technologist
Landscape Gardener
Nursery Operator
Turfgrass Management Specialist

Related High School Subjects

Agriculture; Forestry; Mathematics; Mechanics; Physical Education; Science (Biology; and Chemistry); and Wildlife

Related Post-Secondary Fields of Study

Agriculture and Related Technologies

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Archaeologist

Produced NOVEMBER 2005

Archaeologists reconstruct, describe and interpret the origin, characteristics and development of human societies and cultures, mainly through the study of archaeological sites and their contents.

NOC Number(s): 4169.2
Minimum Education: 4 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: I D M

Duties

Archaeologists may study cultures that existed prior to recorded history, recent societies that have written records, or industrial sites and processes throughout the world. In general, they:

- locate, research and assess sites in search of answers to specific research questions
- excavate sites and record the exact location and condition of artifacts
- study the objects found (e.g. animal bones, plant specimens, metals, tools, texts and sediments)
- conduct laboratory studies
- reconstruct the cultural, economic, physical and intellectual life of past societies and consult with present day members of those societies
- develop theories to explain changes in culture over time
- clean, restore, preserve and prepare artifacts for long term curation
- conserve and manage archaeological sites for future generations
- write reports.

Archaeologists often work closely with researchers in other disciplines. They also may:

- train field staff and volunteers in excavation methods
- authenticate stone, bone, metal and other artifacts
- conduct experiments with replicas of ancient technologies
- conduct research for First Nations communities
- work as curators in museums or interpretive centres
- manage archeological activities for a particular geographic area by issuing permits and reviewing reports
- manage historical resources under government jurisdiction
- evaluate the potential impact of development on archaeological sites
- teach at colleges and universities.

Working Conditions

Some archaeologists work primarily indoors in office, classroom and laboratory environments. Others work outdoors in field environments for at least part of the year. They may travel extensively to survey or excavate archaeological sites.

Field work is usually seasonal. It can be tedious, involving heavy manual labour and extended periods of isolation. Living conditions may be uncomfortable.

Archaeologists may be required to lift and carry materials weighing up to 10 kilograms.

Personal Characteristics

Archaeologists need the following characteristics:

- excellent oral and written communication skills
- good organizational skills
- the ability to analyze problems and think logically
- patience, enthusiasm and the ability to do the required physical labour

- the ability to pay close attention to details
- a good memory for details
- a sensitivity to the needs and problems of co-workers and the local population
- the ability to adapt to changing circumstances.

They should enjoy co-ordinating information and developing innovative approaches, directing the work of others and handling artifacts methodically.

Educational Requirements

The basic educational requirement to work as an archaeologist is a bachelor's degree in archaeology or in anthropology with a specialization in archaeology. To direct an excavation, a master's degree or doctoral (PhD) degree is required (see Other Requirements below). Research positions and teaching positions at the post-secondary level normally require a doctoral degree.

Admission to master's degree programs generally requires an acceptable average in a four year bachelor's degree program (preferably an honours program).

In Alberta, archaeology and anthropology degree programs are offered by the following institutions:

- **Athabasca University** offers three and four year Bachelor of Arts (BA) degree programs in anthropology by distance education. Applicants must be at least 16 years of age.
- The **University of Alberta** in Edmonton offers a four year BA degree program in anthropology with a specialization in archaeology. The entrance requirement is a competitive average of 65 to 80 per cent in English Language Arts 30-1 (or English 30), a 30 level language other than English or Pure Math 30 (or Math 30), and three other approved 30 level subjects (Social Studies 30 recommended). The University of Alberta also offers Master of Arts (MA) and PhD programs in anthropology.
- The **University of Calgary** offers four year BA and Bachelor of Science (B.Sc.) programs in archaeology. The entrance requirement is a high school diploma or equivalent with a competitive average in English Language Arts 30-1 (or English 30), Pure Math 30 or Math 30 or 31, and three of the following: Biology 30, Chemistry 30, Physics 30, Science 30, Social Studies 30, a 30 level language other than English, one five-credit Grade 12 subject. The University of Calgary also offers MA and PhD degree programs in archaeology.
- The **University of Lethbridge** offers four year BA and Bachelor of Arts and Science programs, and five year combined degree programs in anthropology. The entrance requirement is an average of at least 65 per cent in English Language Arts 30-1 (or English 30), three other appropriate 30 level subjects and a fifth Grade 12 subject. The University of Lethbridge also offers an MA program in anthropology.

Post-secondary institutions throughout the province offer university transfer programs that allow students to apply up to two years of study toward university bachelor's degree programs. It is the student's responsibility to ensure that the courses they choose to take will be accepted for credit at the institution to which they wish to transfer.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Other Requirements

A permit from the Government of Alberta is required to carry out archaeological research in Alberta. To qualify, archaeologists must have at least a master's degree in anthropology or archaeology, 24 weeks of supervised training in archaeological surveying and excavation techniques, and six weeks of training in curation or laboratory analysis.

Employment and Advancement

(section revised JANUARY 2006)

Archaeologists are employed by:

- museums as curators and exhibit directors
- governments in conservation or research programs or in historic or cultural resource management
- colleges and universities to teach and conduct research
- First Nations communities to conduct research and record culture history
- consulting firms to conduct impact studies and excavations.

Individuals who have a bachelor's degree may be employed on a seasonal contract basis. Those who have master's degrees may find employment as teachers in community colleges, or work in government museums or consulting firms. To pursue independent research in archaeology, teach at the university level or move into senior government positions, a PhD degree is essential.

Archaeologists are part of the much larger National Occupational Classification 4169: Other Professional Occupations in Social Science. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Professional and Technical Services**
- **Public Administration**
- **Educational Services**
- **Health Care and Social Assistance**

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 350 Albertans are employed in the Other Professional Occupations in Social Science occupational group which is expected to grow 1.5 to 2.5 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover. (**Note**: Since archaeologists form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for archaeologists.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Archaeologists' incomes vary considerably depending on the employer and the archaeologists' qualifications.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Other Professional Occupations in Social Science occupational group working part-time or full-time earned from **$31,800 to $79,600 a year.** The average salary was **$54,900 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)
EDinfo website: www.alis.gov.ab.ca/edinfo

Canadian Sociology and Anthropology Association (CSAA) website: www.csaa.ca

Related Occupational Profiles

Anthropologist
Curator
Museum Technician

Related High School Subjects

Language Arts; Mathematics; Physical Education; Science (Biology; and Chemistry); and Social Studies

Related Post-Secondary Fields of Study

Social Sciences, Law and Religious Studies

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Architect

Produced MARCH 2005

Architects design building projects and advise clients regarding building projects. They prepare programs, sketches and cost estimates, produce scale construction drawings, write specifications and review on-site construction work.

NOC Number(s): 2151
Minimum Education: 6 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: I S D

Duties

Architects meet with clients to discuss their needs and desires, visit the proposed building site, analyze requirements, and review land use by-laws and other codes and regulations. Then they prepare sketches of proposed layouts and present them to clients.

Upon client approval of the design concept and budget, architects proceed through design development to the construction document stage. These documents, usually produced on computers, include:

- detailed drawings
- specifications (written instructions for contractors)
- contract documents.

In planning building layouts, architects must keep in mind the space relationships of the interior, structural, electrical and mechanical systems, and current codes and regulations affecting site planning. They prepare estimates of construction costs from information obtained from building contractors. They also may consult with:

- soils engineers and surveyors (hired by clients)
- structural, electrical and mechanical engineers
- urban planners
- landscape architects
- interior designers and kitchen consultants
- cost estimators
- acoustical engineers
- local planning, zoning and building code officials
- contractors
- materials and equipment manufacturers and suppliers.

Architects frequently meet with clients to:

- evaluate designs and discuss concerns
- provide advice concerning building sites, tenders and the selection of contractors
- report on progress and costs
- review plans
- choose materials, finishes and colours.

Architects also may prepare land use studies, and carry out long range land development plans.

Architectural firms must spend a considerable amount of time marketing their work with potential clients to ensure a steady and growing workload of projects. This requires socializing with clients as well as producing brochures and proposals.

Some architects specialize in areas such as:

- programming
- design
- building and construction technology

- specifications writing
- cost estimating
- project management
- arbitration.

Individual architects or architectural firms may choose to specialize in, or become associated with, the design of particular types of buildings:

- residential buildings (e.g. single or multi-family homes, high rise apartments)
- commercial buildings (e.g. office buildings, shopping centres)
- institutions (e.g. churches, schools, hospitals)
- historic/heritage rehabilitation (restoration of older buildings).

Working Conditions

Architects spend most of their time working in offices and meeting with clients, consultants and co-workers. At times, they are required to visit building sites. The pressure of deadlines and unexpected delays can be stressful.

Architects may work anywhere in the world. International work is common for some Canadian firms.

Personal Characteristics

Architects need the following characteristics:

- creative and imaginative
- able to visualize spatial relationships in three dimensions
- good problem solver
- self-motivated
- organized
- good oral and written communicator
- interested and able to pay attention to details
- able to accept criticism
- able to lead and work well with clients and other professionals.

They should enjoy synthesizing information and developing innovative designs, working with people at tasks requiring precision and supervising the work of others.

Educational Requirements

In Alberta, the **University of Calgary** Faculty of Environmental Design offers a four year Master of Architecture program. Applicants must have a bachelor's degree from a recognized university with a grade point average (GPA) of at least 3.0/4 (or equivalent) in the final two years of study and submit a portfolio of their work.

Post-secondary institutions throughout Alberta offer four year bachelor's degree programs. In general, entrance requirements include a high school diploma with a minimum average (60 to 70 per cent, depending on the program) in English 30 or English Language Arts 30-1 and four other suitable Grade 12 subjects such as 30 level science, math, social studies and language courses.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Other Requirements

Under Alberta's Architects Act, you must be registered with the Alberta Association of Architects (AAA) to practice as an Architect and use the title Architect. If you are not registered with AAA, you may work under the supervision of a registered architect. Licensed interior designers and restricted practitioners may practice architecture on projects of limited scope with AAA approval.

Employment and Advancement

(section revised JANUARY 2006)

Architects may be self-employed or employed by:

- architectural firms
- government agencies
- commercial or industrial organizations
- developers, real estate companies or contractors.

Some architects work on very large projects; others work directly with users on smaller projects. Architects who are self-employed must be good business managers.

Registered architects may become project architects or specifications writers. Experienced architects may become project designers or, if skilled in all stages of architectural design and construction, associates or partners in larger firms. Some architects teach in post-secondary institutions and some do research or pursue careers as writers or critics.

In Alberta, most architects work in the **Professional and Technical Services** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Professional and Technical Services industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

About 1,250 Albertans are employed in the Architects occupational group which is expected to grow 1.2 to 2.2 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 10 to 30 **new** positions will be created each year **in addition** to job openings created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised SEPTEMBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Architects occupational group working part-time or full-time earned from **$31,000 to $114,700 a year.** The average salary was **$63,100 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Association of Architects (AAA) website: www.aaa.ab.ca

Construction Sector Council website: www.csc-ca.org

Royal Architectural Institute of Canada (RAIC) website: www.raic.org

Related Occupational Profiles

Arbitrator
Architectural Technologist
Civil Engineer
Interior Designer
Landscape Architect

Related High School Subjects

Communication Technology; Construction Technologies; Design Studies; Enterprise and Innovation; Financial Management; Fine Arts (Visual Arts); Information Processing; Language Arts; Legal Studies; Management and Marketing; Mathematics; and Science (Physics)

Related Post-Secondary Fields of Study

Engineering, Architecture and Related Studies

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Architectural Technologist

Produced MARCH 2005

Architectural technologists work with architects, engineers and others in designing and developing plans and working drawings, estimating costs and supervising building construction projects.

NOC Number(s): 2251
Minimum Education: 2 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **I M O**

Duties

Architectural technologists implement architects' design concepts by:

- analyzing the technical implications
- assembling the data necessary to complete architectural designs
- using computers to prepare appropriate design and working drawings
- co-ordinating structural, electrical and mechanical designs
- preparing detailed instructions and specifications.

Under an architect's supervision, architectural technologists also may:

- prepare requests for quotations, cost estimates and contracts for projects
- represent the architect on the construction site, conduct site inspections, attend site meetings and prepare meeting notes, and ensure that the builder is complying with design specifications
- instruct site managers or contractors about specific actions needed to correct design problems.

Working Conditions

Architectural technologists generally work in an office environment. Their hours of work may be longer during peak construction periods, and overtime is required to meet deadlines.

Technologists who work directly on construction sites may be required to use scaffolding or ladders, and must follow safety precautions to avoid injury. They may be required to lift items weighing up to 25 kilograms.

Personal Characteristics

Architectural technologists need the following characteristics:

- high moral and ethical standards
- precise, persistent and imaginative
- concerned about detail and accuracy
- able to visualize the details of building components in three dimensions and reproduce them in two dimensions
- able to communicate well and work in co-operation with people in the construction industry
- able to work well under pressure to meet deadlines.

They should enjoy analyzing requirements and finding solutions to problems, taking a methodical approach to their work, and working with instruments and equipment at tasks requiring precision.

Educational Requirements

The minimum educational requirement for employment as an architectural technologist is a **diploma related to architectural technology.**

In Alberta, the following institutions offer architectural technology diploma programs:

- The **Northern Alberta Institute of Technology (NAIT)** in Edmonton offers a two year Architectural Technology diploma program. The entrance requirement is a high school diploma or equivalent, with English 30

or 33, Pure Math 30 and one of the following: Physics 30 (recommended), Chemistry 30 or Science 30. An interest in and aptitude for applied sciences, especially those with a physics base, are definite assets. This is a quota program so higher marks may be required to gain admission.

- The **Southern Alberta Institute of Technology (SAIT)** in Calgary offers a two year Architectural Technology diploma program with specializations in architecture and building development. The entrance requirement is a high school diploma or equivalent with English 30 or 33, Pure or Applied Math 30 and a Grade 12 science (or successful completion of the Pre-Careers program at SAIT).

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Other Requirements

Certification is voluntary. The Alberta Association of Architects (AAA) offers affiliate memberships to architectural technologists who have at least two years of work experience under the supervision of a registered or licensed member of the AAA, and pass an exam.

Employment and Advancement

(section revised JANUARY 2006)

Architectural technologists may work for:

- architects
- consulting engineers
- local authorities
- government departments
- building contractors
- surveyors
- building materials and equipment suppliers
- home design and construction companies
- real estate developers
- utilities companies such as hydro-electric, gas, telephone and oil companies.

They may be employed part-time, full-time or on a contract basis.

Architectural technologists usually start out as assistants to architects, other technologists or engineers. Technologists who work with a number of other technologists on a project team may advance to the position of team captain in charge of the production of working drawings and details. Other options include working as specifications writers for consulting firms or becoming self-employed architectural technologists.

Architectural technologists also may work in related fields such as:

- estimating
- building product sales and promotion
- building contracting or maintenance
- building inspection
- real estate
- building component manufacturing
- graphic design
- desktop publishing.

Architectural technologists are part of the National Occupational Classification 2251: Architectural Technologists and Technicians. In Alberta, over 75 per cent of people employed in this classification work in the **Professional and Technical Services** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Professional and Technical Services industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 750 Albertans are employed in the Architectural Technologists and Technicians occupational group which is expected to grow 1.2 to 2.2 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover. (**Note**: Since architectural technologists form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for architectural technologists.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Architectural Technologists and Technicians occupational group working part-time or full-time earned from **$20,000 to $78,400 a year.** The average salary was **$49,400 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Association of Architects (AAA) website: www.aaa.ab.ca

Construction Sector Council website: www.csc-ca.org

Related Occupational Profiles

Architect
Drafting Technician
Engineering Design and Drafting Technologist
Geomatics/Surveying Technologist
Industrial Designer
Interior Designer
Landscape Architectural Technologist

Related High School Subjects

Communication Technology; Construction Technologies; Design Studies; Information Processing; Language Arts; Mathematics; and Science (Physics)

Related Post-Secondary Fields of Study

Engineering and Science Technologies

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Archivist

Produced DECEMBER 2005

Archivists appraise, acquire, arrange, describe, preserve and facilitate the research of records that have ongoing value.

NOC Number(s): 5113
Minimum Education: 6 years post-secondary education/training
Employment Outlook: Employment turnover plus below average occupational growth in Alberta
Interests: **M I S**

Duties

Archivists select, acquire, maintain and provide access to original documents of ongoing value such as government records, corporate and municipal records, personal papers, and records of associations and businesses. These documents may include textual records, photographs, maps, films, tapes, microforms or computer records.

Duties and responsibilities vary from one position to another but, in general, archivists:

- appraise records based on research into the legal, evidential, financial and historical values of records
- preserve original records and, in some cases, determine whether to keep the original document or transfer the information it contains to another medium such as microfilm, magnetic tape, CD-ROM or optical disc for preservation
- locate valuable records and acquire them for preservation and subsequent research
- arrange and describe archival records to facilitate access to information
- use their knowledge of the extent and availability of relevant sources to provide reference services for sponsoring agencies or the public in general
- preserve materials in their care
- prepare displays and on-line exhibitions to showcase their archives' holdings
- do public relations work for their archives and the profession in general
- supervise the work of assistants and technicians.

Working Conditions

Archivists' working environments vary depending on the size of the institution they work for and the nature of the task at hand:

- When appraising records, archivists work in offices, boardrooms and data processing centres and, sometimes, in storage rooms, warehouses, attics and basements.
- When processing historical materials, they work in an office environment.
- When assisting researchers, they work in an office environment and the archive itself. Temperature and humidity are controlled in most archives. Some archives have dust ventilation systems.

Archivists usually work standard office hours, alone or with other people. When providing reference services, they work with a wide variety of researchers and may be required to work some evenings and weekends.

Personal Characteristics

Archivists need the following characteristics:

- strong organizational and analytical skills
- good communication skills
- good time management skills
- an interest in helping people and preserving the history of the community.

They should enjoy taking a methodical approach to their work, co-ordinating information, and developing innovative solutions to problems.

Educational Requirements

Archivists need:

- well-developed research skills
- a thorough knowledge of the principles and methods of records management and archival work
- computer skills and knowledge related to using information technology for electronic record keeping and preservation
- knowledge of history (particularly Canadian history)
- knowledge of the legal and administrative contexts in which records are created and used.

Since conservators are rarely on staff at archives, archivists also need basic conservation skills and knowledge. Audio/visual archivists require technical knowledge related to the processes and equipment involved with photographs, negatives, film, video and sound archives.

The preferred qualification for archivists is a **master's degree in archival studies**, although many archivists have masters' degrees in history, library science or political science. Candidates who have a Bachelor of Arts (BA) or Bachelor of Science (B.Sc.) degree may be considered if they also have some recognized archives or records management training or extensive experience in those fields.

No master's programs in archival science are offered in Alberta. For information about history, library science and political science degree programs, see the Historian, Librarian and Political Scientist occupational profiles.

Outside of Alberta, the following post-secondary institutions offer two year master's degree programs in archival studies:

- **University of British Columbia**
- **University of Manitoba**
- **University of Toronto**
- **Universite Laval** (instruction in French)
- **L'Universite de Montreal** (instruction in French).

For current information about these programs, prospective students should refer to the appropriate university calendar or website.

Employment and Advancement

(section revised JANUARY 2006)

In Alberta, archivists are employed by:

- provincial government archives
- municipal archives
- university archives
- regional archives
- community archives
- private business and religious archives.

Archivists also may work in records management in organizations such as oil companies and government departments, or have responsibilities related to freedom of information and protection of privacy legislation.

In Alberta, most people employed as archivists work in the following industries:

- **Information, Culture and Recreation**
- **Public Administration**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 50 Albertans are employed in the Archivists occupational group which is expected to grow up to 0.9 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Employment prospects are best for archivists who are willing to work on a contract basis.

Salary

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Archivists occupational group working part-time or full-time earned from **$26,700 to $63,700 a year.** The average salary was **$53,000 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

Archives Society of Alberta website: www.archivesalberta.org

Association of Canadian Archivists website: archivists.ca

Canadian Council of Archives website: www.CdnCouncilArchives.ca

Related Occupational Profiles

Conservator
Curator
Historian
Librarian

Related High School Subjects

Communication Technology; Financial Management; Information Processing; Language Arts; Legal Studies; Mathematics; Science (Chemistry); and Social Studies

Related Post-Secondary Fields of Study

Education and Library Studies; Humanities and Languages; and Social Sciences, Law and Religious Studies

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For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Assessor

Produced DECEMBER 2005

Assessors determine the value of land, buildings, businesses, structures and certain types of equipment for property tax purposes.

NOC Number(s): 1235.1
Minimum Education: 2 years post-secondary education/training
Employment Outlook: Employment turnover plus below average occupational growth in Alberta
Interests: **M d s**

Duties

In general, assessors:

- inspect properties of all types including single family residences, apartment buildings, shopping centres, recreational facilities, hotels, office buildings, farm land, petroleum and other industrial sites and facilities
- collect and analyze information (including statistical data) relating to the value of property or businesses (for example, information about sales or rental income, construction methods and costs, market conditions)
- classify and estimate property values according to assessment legislation using valuation techniques (mass appraisal) and data.
- maintain the municipal assessment roll
- explain assessed values to property owners and defend them at Assessment Review Board and Municipal Government Board hearings.

Assessors must understand and keep current with legislation, regulations, Minister's guidelines and bylaws regarding property assessment and taxation.

Working Conditions

Assessors work in offices and in the field, and may be required to travel extensively particularly in rural areas. Occasionally, they work long and irregular hours to meet deadlines and attend meetings.

Personal Characteristics

Assessors need the following characteristics:

- mature judgement
- initiative and motivation
- excellent oral and written communication skills
- the ability to get along well with all types of people
- the ability to do detailed work
- the ability to make decisions and accept responsibility for them
- the ability to handle stress.

They should enjoy analyzing data, taking a methodical approach to their work, making decisions and working with people.

Educational Requirements

Assessor trainees acquire the necessary experience, knowledge and skills through **a combination of formal education and field experience** under the supervision of an experienced assessor. Most assessors have at least two years of post-secondary education in a related field such as economics, business administration or agriculture. However, those who do not have post-secondary education can satisfy education requirements through distance learning programs. Computer, math and communication skills are essential.

In Alberta, **Lakeland College** in Vermilion offers a two year Appraisal and Assessment diploma program. The entrance requirement is a high school diploma with at least 50 per cent in English Language Arts 30-1 or English 30 (or 65 per cent in ELA 30-2 or English 33) and 55 per cent in Pure Math 30 or Math 30 (or 65 per cent in Applied Math 30 or Math 33). Pure Math 30 or Math 30 is recommended. This program has been designed specifically for the **Alberta Assessors Association** and, upon successful completion, graduates receive advanced standing towards the Association's Accredited Municipal Assessor of Alberta (AMAA) designation.

The **University of British Columbia** offers an 11 course Diploma in Urban Land Economics distance education program. This program also meets AMAA core education requirements.

For current information about programs and mature student admission policies, please check post-secondary calendars or websites.

Other Requirements

Accredited Municipal Assessor of Alberta is a protected title under Alberta's Professional and Occupational Associations Registration Act. This means that to call yourself an Accredited Municipal Assessor of Alberta, you must be a registered member of the Alberta Assessors' Association (AAA). You do **not** have to be registered if you do not call yourself an Accredited Municipal Assessor of Alberta.

Employment and Advancement

(section revised JANUARY 2006)

In Alberta, municipalities are the primary employers and contractors of assessment services. Small towns and municipalities often use the assessment services of private companies. Larger municipal districts, counties and metropolitan centres may have their own assessment staff.

Assessors also may be employed by Alberta Municipal Affairs, become company tax representatives or move into related appraisal fields.

Assessors are part of the larger National Occupational Classification 1235: Assessors, Valuators and Appraisers. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Finance, Insurance and Real Estate**
- **Public Administration**
- **Professional and Technical Services**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 1,350 Albertans are employed in the Assessors, Valuators and Appraisers occupational group which is expected to grow 0.5 to 1.5 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover. (**Note**: Since assessors form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for assessors.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Many assessors work on a contract basis so their earnings may vary considerably.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Assessors, Valuators and Appraisers occupational group working part-time or full-time earned from **$27,800 to $123,100 a year.** The average salary was **$64,800 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Assessors' Association website: www.assessor.ab.ca

Alberta Association of the Appraisal Institute of Canada Website: www.appraisal.ab.ca

Real Estate Council of Alberta (RECA) website: www.reca.ab.ca

International Association of Assessing Officers website: www.iaao.org

Related Occupational Profiles

Personal Property/Equipment Appraiser
Real Estate Appraiser

Related High School Subjects

Communication Technology; Construction Technologies; Design Studies; Financial Management; Language Arts; Legal Studies; Management and Marketing; and Mathematics

Related Post-Secondary Fields of Study

Agriculture and Related Technologies; Business, Management and Administrative Studies; and Social Sciences, Law and Religious Studies

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For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Astronomer

Produced JANUARY 2006

Astronomers conduct observational and theoretical research to broaden our knowledge of energy, matter and natural processes throughout the universe and particularly beyond Earth.

NOC Number(s): 2111.2
Minimum Education: 6 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **I O D**

Duties

Theoretical astronomers use mathematics and physics to formulate explanations for the observed properties of the universe and objects in it, and make predictions by solving mathematical equations or using sophisticated computer simulations. Predictions are tested through further observation.

Observational astronomers use a variety of ground-based and space-borne telescopes and scientific instruments to make observations of and obtain data on astronomical objects. Basic properties such as composition, mass, size, brightness, motion and distance may be measured to test hypotheses about the nature of the universe and matter in it.

Some astronomers are based at major observatories and research institutions where, in addition to their own research activities, they plan and help implement new instruments and techniques. They also help other astronomers use instruments operated by their institutions. In addition to academic research skills, astronomers in this area need to be experts in aspects of observatory and instrument engineering and computer techniques.

All aspects of modern astronomy are highly technical involving the use of state-of-the-art telescopes and detectors, and computers for instrument control, data gathering and subsequent processing and analysis.

Most astronomers connected with universities have teaching responsibilities and are expected to produce original research work for publication in scientific journals.

Working Conditions

Astronomers work in a variety of settings. Observational work requires unconventional hours and a considerable amount of travelling. Sometimes astronomers work at high altitudes in remote areas where weather conditions can be extreme.

Personal Characteristics

Astronomers need the following characteristics:

- an aptitude for physics and mathematics
- the ability to pay close attention to detail
- the ability to work with others as members of a team
- imagination and a capacity for reflection and contemplative study
- public speaking, writing and computer skills
- patience
- curiosity.

They should enjoy synthesizing information and finding innovative solutions to problems, using sophisticated instruments and equipment to perform tasks requiring precision, and supervising the work of others.

Educational Requirements

A four year Bachelor of Science (B.Sc.) degree in astronomy, astrophysics or physics is the minimum qualification for work in technical positions in observatories, planetaria and science centres. Further, knowledge of chemistry and biology can be helpful in many areas of modern astronomy.

A Master of Science (M.Sc.) degree is required for most research assistant positions. A doctoral (PhD) degree is needed for university teaching and most federal government research positions. Most astronomers who have doctoral degrees work as post-doctoral fellows before finding permanent employment.

In Alberta, the following institutions offer four year degree programs in physics or astrophysics:

- The **University of Alberta** in Edmonton offers four year B.Sc. general and honours programs in physics with specializations in geophysics, mathematical physics and physics, and M.Sc. and PhD programs in physics (including astronomy). The entrance requirement for the bachelor's degree program is a competitive average in English Language Arts 30-1 (or English 30), Pure Math 30 (or Math 30), Physics 30 and two approved Grade 12 subjects (Math 31 recommended). The University of Alberta in Camrose also offers a degree program in physics.
- The **University of Calgary** offers a four year B.Sc. program, and M.Sc. and PhD programs in physics with specializations in astrophysics. The entrance requirement for the bachelor's degree program is a high school diploma with a competitive average in English Language Arts 30-1 (or English 30), Pure Math 30 (or Math 30), Chemistry 30 and two other Grade 12 subjects selected from approved lists (Math 31 and Physics 30 recommended).
- The **University of Lethbridge** offers a four year B.Sc. degree program, combined degree programs and M.Sc. and PhD degree program in physics. The entrance requirement for the bachelor's degree program is an average of at least 65 per cent in English Language Arts 30-1 (or English 30), Physics 30, Pure Math 30 (or Math 30, or Applied Math 30 and at least 75 per cent in the University of Athabasca's Math 101 course), Biology 30 or Chemistry 30, and one other Grade 12 subject (Math 31 recommended).

Post-secondary institutions throughout the province offer university transfer programs that allow students to apply up to two years of study toward university bachelor's degree programs. It is the student's responsibility to ensure that the courses they choose to take will be accepted for credit at the insitution to which they wish to transfer.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

Astronomers may work in:

- post-secondary institutions
- government agencies and observatories
- planetaria and science centres.

Some find employment in related industries such as aerospace, communications, computer or other high-tech fields.

Permanent positions are scarce, especially in research, and competition for advancement is keen. However, opportunities exist for two to three year post-doctoral positions at universities and research institutions around the world.

Astronomers are part of the larger National Occupational Classification 2111: Physicists and Astronomers. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Public Administration**
- **Petrochemicals, Rubber, Plastics and Chemicals Manufacturing**
- **Oil and Gas Extraction**
- **Information, Culture and Recreation**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

About 100 Albertans are employed in the Physicists and Astronomers occupational group which is expected to grow 1.5 to 2.5 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover. (**Note**: Since astronomers form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for astronomers.)

Note: University professors are classified in a different occupational group. For more information, see the University Professor occupational profile.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Salaries for university positions vary with:

- personal qualifications
- academic qualifications
- administrative responsibilities
- the particular faculty and university.

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Canadian Astronomical Society website: www.casca.ca

Canadian Space Agency website: www.space.gc.ca

Herzberg Institute of Astrophysics, National Research Council of Canada website: hia-iha.nrc-cnrc.gc.ca

Royal Astronomical Society of Canada website: www.rasc.ca

Related Occupational Profiles

Mathematician
Physicist

Related High School Subjects

Communication Technology; Information Processing; Language Arts; Mathematics; and Science (Chemistry; and Physics)

Related Post-Secondary Fields of Study

Sciences

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Athletic Therapist

Produced MARCH 2005

Athletic therapists work with other health care professionals to advise athletes and coaches on the prevention and treatment of sports injuries, or treat members of the public who have musculoskeletal injuries.

NOC Number(s): 3144
Minimum Education: 4 years post-secondary education/training
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: **S I M**

Duties

Athletic therapists help athletes maintain and improve their athletic capabilities. For example, to treat sports injuries, they may use techniques such as:

- hydrotherapy (therapeutic use of water)
- cryotherapy (therapeutic use of cold)
- electrotherapy (therapeutic use of electricity)
- hands-on treatment (muscle energy, massage)
- therapeutic exercise, conditioning and flexibility training.

In general, athletic therapists perform all or some combination of the following duties:

- develop training programs designed to improve athletic performance
- plan and implement or supervise injury-prevention programs that may include stretching exercises prior to competitions, taping or applying devices such as braces
- conduct an immediate assessment when athletes are injured and provide emergency care or administer first aid
- screen sport and non-sport related injuries or syndromes
- develop and implement rehabilitation programs for musculoskeletal injuries
- help athletes maintain strength and flexibility in uninjured muscles
- assess and report the progress of recovering athletes to coaches and physicians
- perform general administrative duties such as monitoring budgets and supervising staff and student therapists.

Working Conditions

Athletic therapists who work with teams work long, hard and physically demanding hours. They must be present at all competitions and practices. Depending on the sport, this may require frequent travel or evening and weekend work.

Hours of work and working conditions for athletic therapists who work in private practice vary depending on the clinic.

Personal Characteristics

Athletic therapists need the following characteristics:

- good manual dexterity
- physical stamina
- excellent interpersonal and team work skills including sensitivity to the needs of others, patience, tact and persuasive abilities
- the ability to think creatively
- the ability to work effectively in stressful situations.

They should enjoy working with people, designing innovative therapy programs and using equipment to implement treatment plans.

Educational Requirements

Athletic therapists must have a **university degree in athletic therapy** accredited by the Canadian Athletic Therapists' Association.

In Alberta, the **University of Calgary** offers a four year Bachelor of Kinesiology program with a major in athletic therapy in collaboration with **Mount Royal College**. The entrance requirement is a high school diploma with an average of at least 70 per cent in English 30, Chemistry 30, Math 30, Biology 30 and one other 30 level course.

Post-secondary institutions throughout the province offer university transfer programs that allow students to apply up to two years of study toward university bachelor degree programs. It is the student's responsibility to ensure that the courses they choose to take will be accepted for credit at the institution to which they wish to transfer.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Other Requirements

Athletic therapists must be certified by the Canadian Athletic Therapists Association (CATA). Certification requires a 1200 hour practicum and successful completion of a theoretical and practical examination.

Employment and Advancement

(section revised JANUARY 2006)

Athletic therapists may be employed by:

- sports teams and clubs
- post-secondary institutions
- private clinics.

They may work in conjunction with other health care workers such as chiropractors, massage therapists or physiotherapists.

Athletic therapists are part of the larger National Occupational Classification 3144: Other Professional Occupations in Therapy and Assessment. In Alberta, over 75 per cent of people employed in this classification work in the **Health Care and Social Assistance** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Health Care and Social Assistance industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 750 Albertans are employed in the Other Professional Occupations in Therapy and Assessment occupational group which is expected to grow 2.5 to 3.5 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 10 to 30 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since athletic therapists form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for athletic therapists.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Salaries for certified athletic therapists vary greatly. Often, athletic therapists work on a term contract basis.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Other Professional Occupations in Therapy and Assessment occupational group working part-time or full-time earned from **$21,400 to $78,500 a year.** The average salary was **$38,700 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Canadian Athletic Therapists' Association (CATA) website: www.athletictherapy.org

Related Occupational Profiles

Kinesiologist
Massage Therapist
Recreation Therapist
Sport Medicine Physician

Related High School Subjects

Community Health; Language Arts; Physical Education; and Science (Biology; Chemistry; and Physics)

Related Post-Secondary Fields of Study

Physical Education and Recreation

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Auctioneer

Produced OCTOBER 2003

Auctioneers arrange auction sales, evaluate goods and property, conduct bidding and sell items to the highest bidders.

NOC Number(s): 6411
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **S M d**

Duties

Auctioneers sell livestock, industrial machinery, cars, trucks, antiques, real estate, art, furniture and merchandise of all kinds. In general, they:

- evaluate goods before a sale
- arrange and display goods in lots according to similarity and appraised value
- prepare descriptive lists of goods
- advertise the date, time and location of auctions
- conduct sales by describing goods and requesting bids
- maintain the interest of prospective buyers to encourage higher bids
- endeavour to sell goods at fair market value
- sell to the highest bidders
- conclude sales by recording the names and addresses of purchasers and their bids
- disburse monies ethically.

Working Conditions

Auctioneers work both indoors and outdoors in all weather conditions. Those in the agricultural field spend much of their time in auction marts or farm yards. A certain amount of travel is required and hours may be long when sales are running.

Personal Characteristics

Auctioneers need the following characteristics:

- a strong, clear voice
- fluency in their use of words
- a patient but firm manner
- good business sense
- good health and physical stamina to prepare for an auction and keep up a brisk pace during an auction.

They should enjoy working with people, compiling information and supervising the work of others.

Educational Requirements

(section revised MARCH 2005)

Auctioneers must have a working knowledge of the usefulness and current market values of the types of merchandise they sell. It is possible to learn by working as an auction employee but training positions are often hard to obtain.

In Alberta, auctioneers must have graduated from a two week course offered by an accredited auction school or have worked as an auctioneer in another jurisdiction for at least one year. The following private vocational schools offer training programs:

- The **Auctioneering College of Canada** in St. Albert. The entrance requirement is a high school diploma or equivalent.

- The **International School of Auctioneering** in Red Deer. The entrance requirement is a high school diploma or equivalent.
- The **Western Canadian School of Auctioneering** in Leduc. Applicants must be at least 18 years of age and have a high school diploma or equivalent.

Continuing education programs are often offered on an as needed basis.

For current information about programs and mature student admission policies, please check post-secondary calendars or websites.

Setting up and maintaining a successful auction business requires business, appraisal and marketing skills, as well as skill in bid calling. Training or experience in business administration is a definite asset.

Employment and Advancement

Auctioneers may be employed by auction marts and auction rooms, or be self-employed. Many auction businesses are family-owned operations and openings for new employees are limited.

Self-employed auctioneers should have financial backing in place before advertising their services. They are required to set up a licensed auction sales business and post a $25,000 bond.

Success depends on the reputations auctioneers build in their communities.

Salary

(section revised OCTOBER 2005)

Auctioneers may be paid a regular wage or work on a commission basis. Their earnings vary tremendously depending on the type of auction, the current economic situation and the reputation of the auctioneer. Those setting up their own businesses may work in other occupations to provide an additional source of income until they have established a good reputation in the auction sales industry.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Sales Representatives - Wholesale Trade (Non-Technical) occupational group working part-time or full-time earned from **$12,000 to $195,300 a year.** The average salary was **$47,800 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

Alberta Government Services "How to get a License for for an Auction Sales Business" website: www3.gov.ab.ca/gs/services/business/auction_sales.cfm

Auctioneers Association of Alberta website: www.albertaauctioneers.com

Auctioneers Association of Canada website: www.auctioneerscanada.com

Related Occupational Profiles

Sales Representative (Wholesale, Nontechnical)

Related High School Subjects

Agriculture; Communication Technology; Enterprise and Innovation; Financial Management; Language Arts; Legal Studies; and Management and Marketing

Related Post-Secondary Fields of Study

Business, Management and Administrative Studies

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Audiologist

Produced DECEMBER 2004

Audiologists work with children and adults to prevent, assess, diagnose and provide treatment and counselling for hearing and balance disorders.

NOC Number(s): 3141.1
Minimum Education: 6 years post-secondary education/training
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: **O I S**

Duties

Audiologists may specialize in working with a particular age group (e.g. infants, preschoolers, the elderly) or work with people of all ages. In general, they:

- use specialized instruments and electronic equipment to test and measure hearing abilities
- determine the degree, type and location of hearing problems
- recommend, select, fit and teach clients how to use appropriate assistive listening devices (e.g. hearing aids, telephone adaptors, visual alarms)
- plan and implement management programs (e.g. auditory training, instruction in speech reading)
- help parents and others (e.g. teachers, employers) facilitate communication for people who have hearing impairments
- maintain client records
- consult with and advise other health professionals.

Audiologists often work in teams with speech-language pathologists, physicians, psychologists, social workers, nurses, teachers, occupational therapists or physical therapists. For example, teams may be involved in the assessment and rehabilitation of hearing abilities through the prescription of hearing aids, speech reading instruction or teaching strategies. Or they may be involved in studying and improving measures for hearing conservation in work, school and leisure settings.

Some audiologists:

- develop and supervise hearing screening programs
- work with clients who have problems with balance
- educate and supervise students, professionals and support personnel in a variety of work settings
- participate in research related to hearing and balance
- work in the hearing aid manufacturing and sales industries
- teach in universities and colleges.

Working Conditions

Audiologists generally work standard weekday office hours. They may work with individual clients or groups of clients in private practice clinics, community health centres, rehabilitation centres, hospitals or schools. Those in the hearing aid manufacturing and sales industries work primarily with other audiologists.

Personal Characteristics

Audiologists need the following characteristics:

- excellent communication and interpersonal skills
- the intellect and perseverance required to complete the training
- sensitivity to client needs
- the ability to concentrate and pay close attention to details
- an appreciation for precision instrumentation

- the ability to work in a team environment.

They should enjoy working with people, exploring problems in depth and operating equipment.

Educational Requirements

In Canada, the education requirement for audiologists is a **master's degree in audiology.** Admission to master's degree programs generally requires an acceptable average in a four year bachelor's degree program with specified courses.

In Canada, master's degree programs in audiology are offered by:

- **University of Western Ontario** in London
- **University of British Columbia** in Vancouver
- **Dalhousie University** in Halifax
- **University of Montreal** (instruction in French)
- **University of Ottawa** (instruction in French).

An internship in a hospital, private hearing clinic, rehabilitation centre or health care facility is required before graduation.

Universities and colleges throughout Alberta offer bachelor's degree programs that can provide suitable preparation for a master's degree program in audiology. Admission requirements for bachelor's degree programs vary from one post-secondary institution and program to another but generally include a high school diploma with an average of at least 60 per cent (sometimes 70 per cent) in English 30, Pure Math 30 or Math 30, Biology 30 and two other appropriate 30-level subjects. Before enrolling in a program, prospective students should consult the institutions offering master's degree programs regarding course requirements.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Other Requirements

Under Alberta's Health Professions Act and Speech-Language Pathologists and Audiologists Profession Regulation, registration with the Alberta College of Speech-Language Pathologists and Audiologists (ACSLPA) is mandatory if you meet identified competency requirements and provide professional services directly to the public, teach the practice of the profession to members or students of the profession, or supervise registered members who provide services to the public. Registered members, who are authorized by the College, provide restricted activities specified in the Regulation. Only registered members may call themselves Audiologists.

Employment and Advancement

(section revised JANUARY 2006)

Most audiologists are employed as clinicians by:

- private practice offices
- hospitals
- schools
- community health centres.

Some are employed as:

- researchers in hospitals, universities and government agencies (a PhD is usually required)
- administrators of speech and hearing programs
- sales representatives for hearing aid companies (for more information, see the Technical Sales Representative occupational profile).

Private practice fees are not covered by Alberta Health Care Insurance but many private insurance plans, as well as other sources of government funding, cover some services and products.

Audiologists are part of the larger National Occupational Classification 3141: Audiologists and Speech-Language Pathologists. In Alberta, people employed in this classification work in the following industries:

- **Health Care and Social Assistance**
- **Educational Services**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 900 Albertans are employed in the Audiologists and Speech-Language Pathologists occupational group which is expected to grow 3.0 to 4.0 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 20 to 40 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since audiologists form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for audiologists.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Audiologists and Speech-Language Pathologists occupational group working part-time or full-time earned from **$15,300 to $70,100 a year.** The average salary was **$60,400 a year.**

For information about current collective agreements in the public and not-for-profit sectors, see the Health Sciences Association of Alberta (HSAA) website.

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

Canadian Association of Speech-Language Pathologists and Audiologists (CASLPA) website: www.caslpa.ca

Alberta College of Speech-Language Pathologists and Audiologists website: www.acslpa.ab.ca

Health Sciences Association of Alberta (HSAA) website: www.hsaa.ca

Related Occupational Profiles

Hearing Aid Practitioner
Linguist
Speech-Language Pathologist

Related High School Subjects

Community Health; Enterprise and Innovation; Language Arts; Mathematics; and Science (Biology; and Chemistry)

Related Post-Secondary Fields of Study

Health Care and Medical Sciences; and Sciences

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Auto Body Technician

Apprenticeship and Industry Training

Produced FEBRUARY 2006

Auto body technicians repair, replace and refinish damaged motor vehicle structures and body parts, and interior and exterior finishes.

NOC Number(s): 7322
Minimum Education: Apprenticeship Trade - Grade 10
Employment Outlook: Employment turnover plus below average occupational growth in Alberta
Interests: O M i

Duties

In Alberta, people in this occupation may be certified as auto body:

- preppers
- repairers
- refinishers
- technicians.

Auto body preppers do surface preparation, minor damage repairs, masking and priming. They may:

- apply anti-corrosion compounds while vehicles are still mounted on frame repair equipment
- identify and prepare substrate mechanically (with abrasives) or chemically
- mix and apply a sequence of undercoat products and ensure chemical compatibility, adhesion and durability
- remove and install bolt-on components such as hoods, decklids, fenders, trim, doors, glass and interior items.

Auto body repairers do damage appraisals, frame and unibody structural repairs, body sheet-metal work, plastic repairs, component replacement and alignment. They may:

- repair supplemental restraint system (e.g. air bags and seat belts)
- restore the structural integrity of damaged vehicles by cutting away damaged components and welding in new or recycled replacements
- remove and install bolt-on components such as hoods, decklids, fenders, trim, doors, glass and interior items
- ensure driver and passenger protection by verifying dimensional accuracy and system functionality for all repairs
- test drive vehicles to ensure proper alignment and handling.

Auto body refinishers do damage appraisals, surface preparation, minor damage repairs, masking, colour matching, priming and top coating. They may:

- apply anti-corrosion compounds while vehicles are still mounted on frame repair equipment
- identify and prepare substrate mechanically (with abrasives) or chemically
- mix and apply a sequence of undercoat products and ensure chemical compatibility, adhesion and durability
- match colours accurately
- remove and install bolt-on components such as hoods, decklids, fenders, trim, doors, glass and interior items.

Auto body technicians often specialize in damage appraisal, frame straightening, preparation, sheet metal work, painting, or plastics. They may:

- prepare or review motor vehicle repair estimates
- use frame machines to straighten bent frames and unitized bodies
- remove badly damaged sections of vehicles such as trunk lids, roof and rear body panels and weld in new sections
- work out minor damage in body panels, fenders, skirting and sheet metal trim, and weld torn metal
- cover bumpers, windows and trim with masking tape and paper in preparation for painting
- apply primers with spray guns
- clean and smooth out surfaces and apply paint
- repair or replace interior and exterior components such as instrument panels, seat frame assemblies, carpets,

floorboards, trim panels and moldings
- inspect vehicles for dimensional accuracy and test drive them to ensure proper alignment and handling.

Working Conditions

All types of auto body technicians work indoors in a noisy, sometimes dusty, environment. They generally work a 40-hour, five-day week with occasional overtime. There is some risk of injury when working with sharp metals, power tools and exposure to dust and fumes.

Auto body technicians may be required to lift items weighing up to 25 kilograms.

Personal Characteristics

Auto body technicians need the following characteristics:
- physical strength and stamina
- manual dexterity
- creativity, patience and an eye for detail
- good colour vision
- the ability to keep up to date with changing technology
- good customer services skills
- commitment to safe work habits.

They should enjoy doing precision work and creative decision-making.

Educational Requirements

To work in Alberta, auto body technicians must be registered apprentices or certified journeymen.

To **register** with **Alberta Apprenticeship and Industry Training**, apprentices must:
- have at least Alberta Grade 10 with five credit courses in English language arts, math, science and social studies (or equivalent) or pass an entrance exam
- find a suitable employer who is willing to hire and train an apprentice. Most employers prefer to hire high school graduates and may select apprentices from among their current employees.

The **term of apprenticeship** for auto body:
- **preppers** is two years (two 12-month periods) that include a minimum of 1,600 hours of on-the-job training with four weeks of technical training in the first year and a minimum of 1,800 hours on-the-job training in the second.
- **repairers** is three years (three 12-month periods) that include a minimum of 1,600 hours of on-the-job training with four weeks of technical training in the first year and a minimum of 1,500 hours of on-the-job training and seven weeks of technical training in the second and third. (Prepper training is included.)
- **refinishers** is two years (two 12-month periods) that include a minimum of 1,600 hours of on-the-job training with four weeks of technical training in the first year and a minimum of 1,600 hours of on-the-job training and six weeks of technical training in the second. (Prepper training is included.)

The **auto body technician** branch does not have an apprenticeship program. Individuals who complete both the repairer **and** refinisher apprenticeship training qualify for certification as an auto body technician.

High school students can become apprentices and gain credits toward apprenticeship training and a high school diploma at the same time through the Registered Apprenticeship Program (RAP).

Applicants who have related training or work experience may be eligible for credit or certification.

Only **auto body refinishers** and **auto body technicians** apprentices may attempt the Interprovincial Exam in the final period of their apprenticeship training and, if successful, are granted a Red Seal (which is recognized in most parts of Canada).

Technical training is arranged by Alberta Apprenticeship and Industry Training and is currently offered at:
- the Northern Alberta Institute of Technology (NAIT) in Edmonton
- the Southern Alberta Institute of Technology (SAIT) in Calgary.

Outside the apprenticeship program, the **Northern Alberta Institute of Technology (NAIT)** in Edmonton offers a one year Auto Body Repair certificate program. The entrance requirement is Grade 10 with English, math and a science.

Pre-employment programs for prospective apprentices and continuing education programs for journeymen may be offered on an as needed basis by the institution(s) listed above or other schools.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

Auto body technicians are employed by auto body repair shops, automobile and truck dealerships, custom shops and sometimes by trucking companies and buslines.

Experienced auto body technicians may advance to supervisory positions, start their own businesses or become automobile damage appraisers for insurance companies. Alberta certified journeyman auto body technicians who have the supervisory or management skills required by industry may apply for an Achievement in Business Competencies Blue Seal by contacting Alberta Apprenticeship and Industry Training.

Auto body technicians are part of the larger National Occupational Classification 7322: Motor Vehicle Body Repairers. In Alberta, over 75 per cent of people employed in this classification work in the **Repair, Maintenance, Personal and Other Services** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Repair, Maintenance, Personal and Other Services industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 3,350 Albertans are employed in the Motor Vehicle Body Repairers occupational group which is expected to grow 0.8 to 1.8 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 20 to 70 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since auto body technicians form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for auto body technicians.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Apprentice **auto body preppers** earn at least 55 per cent of the journeyman wage in their place of employment in the first year and 70 per cent in the second.

Apprentice **auto body repairers** earn at least 55 per cent of the journeyman wage in their place of employment in the first year, 70 per cent in the second and 80 per cent in the third.

Apprentice **auto body refinishers** earn at least 55 per cent of the journeyman wage in their place of employment in the first year and 70 per cent in the second.

According to the Alberta Provincial Apprenticeship Committee for this trade, journeyman wage rates for the branches may vary, but generally range from **$17 to $26 an hour plus benefits** (2006 estimate). Top earners (with the exception of auto body preppers), based on performance, proficiency and region of employment can earn upwards of **$70,000 annually**.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Motor Vehicle Body Repairers occupational group working part-time or full-time earned from **$17,200 to $90,800 a year.** The average salary was **$42,500 a year.** Albertans employed as auto body repairers/painters working part-time or full-time earned from **$19,400 to $91,000 a year.** The average salary was **$43,700 a year.**

Other Sources of Information

Alberta Apprenticeship and Industry Training website: www.tradesecrets.org

Post-secondary institution calendars or websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Related Occupational Profiles

Automobile Accessories Installer
Automotive Service Technician
Glazier

Related High School Subjects

Fabrication Studies; Language Arts; Mathematics; Mechanics; Physical Education; and Science

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For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Auto Detailer

Produced JANUARY 2004

Auto detailers clean and refurbish the interiors and exteriors of automobiles.

NOC Number(s): 6662.5
Minimum Education: Less than high school
Employment Outlook: Employment turnover plus below average occupational growth in Alberta
Interests: **O M d**

Duties

Auto detailers make cars and trucks look as new as possible for automobile owners, car dealerships, car rental services and insurance companies. Duties and methods vary but, in general, auto detailers:

- hand wash and wax vehicles
- clean the undercarriage, engine, tires, chrome and aluminum parts, upholstery, vinyl and leather
- use air compressors and other tools to clean vents and other small places that gather dust
- vacuum and shampoo carpets
- remove stains.

Experienced auto detailers may also touch up chipped paint, tint windows and repair or replace upholstery.

Working Conditions

Auto detailing is repetitive, physically demanding work. Lifting items that weigh up to 10 kilograms is routinely required.

Personal Characteristics

Auto detailers need the following characteristics:

- the ability to lift and carry heavy equipment such as polishers and buffers
- the ability to repeatedly stoop, kneel, crouch and work in awkward positions
- the ability to pay close attention to details.

They should enjoy operating specialized cleaning equipment and taking a methodical approach to cleaning vehicle interiors and exteriors.

Educational Requirements

There are no standard education requirements for auto detailers but employers generally prefer to hire applicants who have related experience or a high school diploma. Basic reading and arithmetic skills are required.

Auto detailers are **trained on the job** and through short courses offered by auto and car-care product manufacturers. To make vehicles shine without causing damage in the process, auto detailers must be able to select and use appropriate cleaning agents, solvents and equipment. They usually start with simpler tasks and may take on more complex work as they gain knowledge and experience.

Employment and Advancement

(section revised JANUARY 2006)

Auto detailers are employed by car washes and shops that specialize in auto detailing. Employment is often seasonal in Alberta.

Experienced auto detailers may advance to supervisory positions or move into installing auto accessories (for more informaton, see the Automobile Accessories Installer occupational profile). Those who have the required entrepreneurial skills may start their own businesses.

Auto detailers are part of the larger National Occupational Classification 6662: Specialized Cleaners. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Repair, Maintenance, Personal and Other Services**
- **Management, Administrative and Other Support Services**
- **Retail Trade**
- **Transportation and Warehousing**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- time of year (for seasonal jobs)
- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 4,450 Albertans are employed in the Specialized Cleaners occupational group which is expected to grow 0.5 to 1.5 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 20 to 70 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since auto detailers form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for auto detailers.)

There is a relatively high employment turnover rate in this occupation so demand for new workers is fairly steady. However, there are often many applicants for vacant positions.

Salary

(section revised OCTOBER 2005)

Auto detailers may be paid an hourly wage or per job/vehicle.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Specialized Cleaners occupational group working part-time or full-time earned from **$12,500 to $152,100 a year.** The average salary was **$28,700 a year.**

Auto detailers' incomes are usually at the lower end of this range.

Related Occupational Profiles

Automobile Accessories Installer
Carpet and Upholstery Cleaner
Custodian
Room/Housekeeping Attendant

Related High School Subjects

Language Arts; and Physical Education

Related Post-Secondary Fields of Study

Trades, Industrial and Related Training

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Automated Systems Technologist

Produced JULY 2004

Automated systems technologists analyze, implement, maintain and design electro-mechanical (automated) systems. These systems often include mechanical components, sensors, actuators and control systems and may include stationary or mobile robots.

NOC Number(s): 2232.1
Minimum Education: 2 years post-secondary education/training
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: **O I M**

Duties

Automated systems technologists are involved in the integration of electrical, mechanical and computer systems to automate and control industrial processes. For example, they may work with:

- computer controlled manufacturing equipment
- industrial machines that perform automated tasks such as spot welding auto bodies, loading or unloading presses, spray painting, sorting items or cutting cloth with lasers.

Working in collaboration with manufacturing engineers and other professionals, automated systems technologists:

- design and install automated cells or systems
- design and assemble printed circuit boards
- program industrial controls
- calibrate and maintain control systems
- supervise the assembly of automated systems
- plan production operations and facilities
- integrate automated equipment into existing manufacturing systems
- keep records, compile information and write reports.

Working Conditions

Automated systems technologists work in offices and laboratories, and on the production floor in industrial environments. They may work standard weekday hours or shifts, and may be required to work overtime to meet deadlines or repair faulty equipment. Safety precautions must be observed when working in the potentially hazardous surroundings of a manufacturing plant.

Lifting up to 25 kilograms may be required.

Personal Characteristics

Automated systems technologists need the following characteristics:

- an aptitude for mechanics and electronics
- patience and creative problem-solving ability
- manual dexterity
- good colour perception
- intellectual curiosity
- good communication skills.

They should enjoy doing precise work, analyzing test results and finding innovative solutions to problems.

Educational Requirements

The minimum educational requirement to work as an automated systems technologist is a **related two year diploma** of technology.

In Alberta, the **Southern Alberta Institute of Technology (SAIT)** in Calgary offers a two year Automated Systems Engineering Technology diploma program. The admission requirement is a high school diploma with English 30 or 33 and Pure Math 30 or successful completion of the Pre-Careers program at SAIT. Physics 20 is recommended.

For information about related technical programs of study offered in Alberta, see the Electronics Engineering Technologist and Mechanical Engineering Technologist occupational profiles.

In British Columbia, the **British Columbia Institute of Technology (BCIT)** School of Engineering Technology in Burnaby offers a four-term Robotics (Automation) Technology diploma program. The admission requirement is a high school diploma with Grade 12 English and at least a C+ in Grade 12 math and Grade 11 physics.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Other Requirements

Certification is voluntary. The Alberta Society of Engineering Technologists (ASET) offers certification for graduates of recognized education programs who have two years of successful experience in industry.

Employment and Advancement

(section revised JANUARY 2006)

Automation systems technologists are employed by:

- automated systems integrators
- manufacturers of consumable goods (e.g. electronics, metal or plastic products producers, food and beverage processors)
- heating, ventilation and air conditioning (HVAC) companies
- the armed forces
- research institutes.

They may also be employed as technical sales representatives (for more information, see the Technical Sales Representative occupational profile).

With experience and initiative, automated systems technologists may advance to supervisory positions.

Automated systems technologists are part of the larger National Occupational Classification 2232: Mechanical Engineering Technologists and Technicians. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Professional and Technical Services**
- **Oil and Gas Extraction**
- **Metals, Metal Fabrication and Machinery Manufacturing**
- **Construction**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 1,750 Albertans are employed in the Mechanical Engineering Technologists and Technicians occupational group which is expected to grow 2.2 to 3.2 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 30 to 60 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since automated systems technologists form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for automated systems technologists.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Mechanical Engineering Technologists and Technicians occupational group working part-time or full-time earned from **$24,400 to $100,500 a year.** The average salary was **$67,000 a year.**

For more detailed information, see ASET's Annual Salary Surveys.

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Society of Engineering Technologists (ASET) website: www.aset.ab.ca

Related Occupational Profiles

Biomedical Engineering Technologist
Computer Service Technician
Electrical Engineering Technologist
Electronics Engineering Technologist
Mechanical Engineering Technologist

Related High School Subjects

Design Studies; Electro-Technologies; Fabrication Studies; Information Processing; Language Arts; Mathematics; Mechanics; and Science (Physics)

Related Post-Secondary Fields of Study

Engineering and Science Technologies

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Automobile Accessories Installer

Produced SEPTEMBER 2003

Automobile accessories installers install accessories such as heaters, audio systems, security systems, lights, antennas, upholstery and truck box liners.

NOC Number(s): 9482.1
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **O M i**

Duties

Automobile accessories installers may specialize in the type of vehicle they work on or the types of accessories they install. For example, they may work primarily on cars, trucks, vans, commercial vehicles or motor homes, or they may specialize in installing one or more types of after-market accessories:

- alarm, remote starter, audio or other electronic systems
- mirrors, truck running boards, spoilers, etc.
- film for tinting windows
- upholstery.

Duties and responsibilities vary from one position to another but, in general, accessories installers:

- remove vehicle interior parts if necessary
- drill and tap holes to mount accessories
- bolt, screw, clip, weld, solder or otherwise fasten parts and components together
- assemble and fit accessories to vehicles
- position and install parts and subassemblies
- reinstall vehicle interior parts as required
- maintain their equipment and keep their work environments clean.

They may also keep records, compute charges for labour and materials, and deal directly with customers.

Electronic systems installers install, diagnose and repair audio, alarm and other electronic devices. They study circuit diagrams, test wiring and other components to locate defects and replace defective parts.

Upholstery installers measure, cut and sew materials for upholstery and covers. They may also adjust or replace seat springs.

Working Conditions

Most automobile accessories installers work a 40-hour, five-day week. Some evening, weekend or holiday work may be required. The work is sometimes noisy and dirty, and there is some risk of injury involved in working with power tools and near exhaust gases.

Some installers are routinely required to lift items that weigh up to 25 kilograms.

Personal Characteristics

Automobile accessories installers need the following characteristics:

- good eyesight and manual dexterity
- mechanical interest and aptitude
- good communication skills
- good organizational skills
- the ability to visualize three-dimensional objects and analyze problems
- a willingness to keep up to date with changing technology.

They should enjoy using power tools and operating equipment, taking a methodical approach to their work, and fitting and adjusting parts.

Educational Requirements

Automobile accessories installers are **trained on the job**. Employers generally prefer to hire applicants who already have some related education or experience. For example, installers who build wood truck box liners and tool boxes should know how to use table saws and wood tools safely.

Electronic systems installers must be familiar with 12-volt electrical systems. High school math, physics and electronics courses and **Mobile Electronics Certification Program (MECP) training** are definite assets.

Trainees may be expected to provide their own hand tools.

Employment and Advancement

(section revised JANUARY 2006)

Automobile accessories installers are employed by automotive specialty shops.

Experienced installers may advance to service manager or shop forman positions. Some start their own businesses or purchase existing businesses.

Automobile accessories installers are part of the larger National Occupational Classification 9482: Motor Vehicle Assemblers, Inspectors and Testers. In Alberta, over 75 per cent of people employed in this classification work in the **Other Manufacturing** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- time of year (for seasonal jobs)
- trends and **events** affecting overall employment (especially in the Other Manufacturing industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

About 450 Albertans are employed in the Motor Vehicle Assemblers, Inspectors and Testers occupational group which is expected to grow 1.5 to 2.5 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover. (**Note**: Since automobile accessories installers form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for accessories installers.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Motor Vehicle Assemblers, Testers and Inspectors occupational group working part-time or full-time earned from **$16,000 to $82,200 a year.** The average salary was **$31,700 a year.**

Other Sources of Information

Automotive Service and Repair Association website: www.asra-alberta.ab.ca

Mobile Electronics Certification Program (MECP) Canada website: www.mecp.ca

Motor Dealers' Association of Alberta website: www.mdaofalberta.com

Related Occupational Profiles

Auto Body Technician
Auto Detailer
Electronic Technician
Security Alarm Installer
Upholsterer

Related High School Subjects

Design Studies; Electro-Technologies; Fabrication Studies; Language Arts; Mathematics; and Science (Physics)

Related Post-Secondary Fields of Study

Trades, Industrial and Related Training

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Automotive Service Technician

Produced FEBRUARY 2006

Automotive service technicians perform preventative maintenance, diagnose faulty operations and repair automotive vehicles and light trucks.

NOC Number(s): 7321.1
Minimum Education: Apprenticeship Trade - Grade 10
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **O I M**

Duties

Automotive service technicians adjust, test and repair engines, steering systems, braking systems, drive trains, vehicle suspensions, electrical systems and air-conditioning systems and do wheel alignments. In large shops, they sometimes specialize in repairing, rebuilding and servicing specific parts such as braking systems, suspension and steering systems. In smaller shops, they may work on a wider variety of repair jobs.

Duties vary from one position to another but, in general, automotive service technicians:

- determine the problem by reading the work order, examining the vehicle, using testing equipment or taking the vehicle for a test drive
- dismantle faulty assemblies and repair or replace worn or damaged parts
- reassemble, adjust and test the repaired mechanism.

Automotive service technicians may also:

- perform scheduled maintenance services such as oil changes, lubrications and tune ups
- advise customers on work performed, general vehicle conditions and future repair requirements.

Working Conditions

Most automotive service technicians work a 40-hour, five-day week. Some evening, weekend or holiday work may be required. The work is sometimes noisy and dirty. There is some risk of injury when working with power tools and exposure to exhaust gas fumes.

Technicians may be required to lift items weighing up to 25 kilograms.

Personal Characteristics

Automotive service technicians need the following characteristics:

- good hearing, eyesight and manual dexterity
- mechanical aptitude and interest
- the ability to keep up to date with changing technology.

They should enjoy doing precision work and working independently.

Educational Requirements

To work in Alberta, automotive service technicians must be registered apprentices or certified journeymen.

To **register** with **Alberta Apprenticeship and Industry Training**, apprentices must:

- have at least English Language Arts 20-2, Applied Math 20 or Math 23 and Science 10 (or equivalent) or pass an entrance exam
- find a suitable employer who is willing to hire and train an apprentice. Most employers prefer to hire high school graduates and may select apprentices from among their current employees. A working knowledge of electricity, electronics and computers is an asset.

The **term of apprenticeship** is four years (four 12-month periods) that include a minimum of 1,500 hours of on-the-job training and eight weeks of technical training each year. High school students can become apprentices and gain credits toward apprenticeship training and a high school diploma at the same time through the Registered Apprenticeship Program (RAP).

Apprentices are required to provide their own tools.

Applicants who have related training or work experience may be eligible for credit or certification.

Automotive service technician apprentices may attempt the Interprovincial Exam in the final period of their apprenticeship training and, if successful, are granted a Red Seal (which is recognized in most parts of Canada).

Technical training is arranged by Alberta Apprenticeship and Industry Training and is currently offered at:

- Lakeland College in Vermilion
- Lethbridge Community College
- Medicine Hat College
- the Northern Alberta Institute of Technology (NAIT) in Edmonton and Fairview
- Red Deer College
- the Southern Alberta Institute of Technology (SAIT) in Calgary.

Outside the apprenticeship program, the following post-secondary institutions offer related training:

- **Lethbridge Community College** offers a one year Automotive Systems certificate program. The entrance requirements are Applied Math 30, Pure Math 30 and English Language Arts 30-1, 30-2 or equivalent.
- **Northern Alberta Institute of Technology (NAIT)** in Edmonton offers a one year Automotive Mechanic certificate program. The entrance requirement is Grade 10 with English, math and science. Preference may be given to those who also have automotive experience. NAIT also offers a 32-week General Mechanic certificate of achievement. Applicants require English 10 or a Grade 11 English and Math 10 or a Grade 11 Math or equivalent.
- **Red Deer College** offers a one year Automotive Service certificate. The entrance requirement is Pure Math 10, Applied Math 20 or Math 23 and English 10, 23 or equivalent.
- **Southern Alberta Institute of Technology (SAIT)** in Calgary offers a two year Automotive Service Technology diploma program. The entrance requirement is a minimum of 70 Alberta high school credits (Grade 11) with Pure Math 20, Applied Math 20 or Math 23, a Grade 11 English and a Grade 11 science. All applicants are required to write a mechanical reasoning test.

Pre-employment programs for prospective apprentices and continuing education programs for journeymen may be offered on an as needed basis by the institution(s) listed above or other schools.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

Automotive service technicians are employed by automotive repair shops, specialty repair shops, service stations, car and truck dealerships and by large organizations that own fleets of vehicles.

Experienced automotive service technicians may advance to service manager or shop foreman positions. Alberta certified journeyman automotive service technicians who have the supervisory or management skills required by industry may apply for an Achievement in Business Competencies Blue Seal by contacting Alberta Apprenticeship and Industry Training. Some automotive service technicians open their own repair facilities.

Automotive service technicians are part of the larger National Occupational Classification 7321: Automotive Service Technicians, Truck Mechanics and Mechanical Repairers. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Repair, Maintenance, Personal and Other Services**
- **Retail Trade**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 15,450 Albertans are employed in the Motor Vehicle Mechanics, Technicians and Mechanical Repairers occupational group which is expected to grow 1.1 to 2.1 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 160 to 330 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since automotive service technicians form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for automotive service technicians.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Apprentice automotive service technicians earn at least 55 per cent of the journeyman wage rate in their place of employment in the first year, 70 per cent in the second, 80 per cent in the third and 90 per cent in the fourth. According to the Alberta Provincial Apprenticeship Committee for this trade, journeyman wage rates vary, but generally range from **$20 to $24 an hour plus benefits** (2006 estimate).

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Automotive Service Technicians occupational group working part-time or full-time earned from **$15,000 to $113,500 a year.** The average salary was **$48,600 a year.**

Other Sources of Information

Alberta Apprenticeship and Industry Training website: www.tradesecrets.org

Post-secondary institution calendars or websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Automotive Service and Repair Association website: www.asra-alberta.ab.ca

Motor Dealers' Association of Alberta website: www.mdaofalberta.com

Related Occupational Profiles

Auto Body Technician
Canadian Forces Personnel - Non Commissioned
Career and Technology Studies Teacher
Heavy Equipment Technician

Related High School Subjects

Electro-Technologies; Language Arts; Mathematics; Mechanics; and Science

Related Post-Secondary Fields of Study

Trades, Industrial and Related Training

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Avionics Technologist

Produced JUNE 2004

Avionics technologists modify, install, maintain and repair electronic equipment used in aviation.

NOC Number(s): 2244.3
Minimum Education: 2 years post-secondary education/training
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: O M i

Duties

Avionics include electrical, electronic and instrumentation systems on aircraft.

Avionics technologists work closely with other aircraft maintenance personnel. In general, they select, install, calibrate, repair and maintain aircraft avionics components and subsystems. They may also use computer-aided drafting and design (CADD) applications to assist engineers in designing modifications to avionics systems.

The vast majority of the work performed by avionics technologists deals with:

- maintenance of installed avionics on aircraft
- installation and testing of avionics equipment in aircraft
- maintenance and testing of avionics systems on the test bench.

Avionics technologists may be involved in:

- integrating avionics systems design into aircraft
- technical writing
- customer relations
- developing and producing electrical and electronic devices used in aviation
- assembling prototypes (models) of circuits, instruments and systems for testing
- fabricating basic sheet metal assemblies
- troubleshooting electrical, electromechanical and electronic instrumentation, circuits and sub-assemblies
- preparing and monitoring quality assurance plans and activities.

Avionics technologists may work as part of a team with engineers and technicians, or they may be solely responsible for a particular project, a laboratory or the maintenance of particular avionics systems.

Working Conditions

Avionics technologists work in laboratories and aircraft hangars, and in the close, cramped environment surrounding electronic instrumentation in an aircraft. They often work outside when there is no hangar to house the aircraft they are working on. They may work shifts or be required to lift items weighing up to 25 kilograms.

Avionics technologists working on international contracts may be away from home for a few days at a time or for year or more.

Personal Characteristics

Avionics technologists need the following characteristics:

- good oral and written communication skills to effectively convey scientific and technical information
- able to work alone or as members of a team
- willingness to keep up to date by taking additional training as required
- good mathematical abilities and the ability to visualize three-dimensional objects from two-dimensional drawings
- analytical ability, persistence and excellent troubleshooting skills
- good colour vision for distinguishing component parts

- manual and finger dexterity for handling tools and small parts.

They should enjoy working with tools and equipment at tasks that require precision, having clear rules and organized methods to guide their activities and analyzing data to solve problems.

Educational Requirements

In Alberta, the minimum education requirement for avionics technologists is a related **two year diploma** from an institute of technology. The following post-secondary institutions offer avionics programs:

- The **Northern Alberta Institute of Technology (NAIT)** in Edmonton offers a two year Avionics Engineering Technology diploma program. The entrance requirement is a high school diploma with English 30 or 33, Pure Math 30 (or equivalent) and one of Physics 30, Science 30 or Chemistry 30 (Physics 30 recommended).
- The **Southern Alberta Institute of Technology (SAIT)** in Calgary offers a two year Avionics Technology diploma program. The entrance requirement is a high school diploma with English 33 and Applied Math 30 or equivalent (or successful completion of the Pre-Careers program at SAIT).

For information about other related programs of study, see the Aircraft Maintenance Engineer, Electronic Technician and Electronics Engineering Technologist occupational profiles.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Other Requirements

(section revised OCTOBER 2004)

Certification with the Alberta Society of Engineering Technologists (ASET) is voluntary.

Under Alberta's Engineering, Geological and Geophysical Professions Act, Registered Professional Technologists - Engineering must be ASET members to engage in a defined scope of engineering practice as registered by the Association of Professional Engineers, Geologists and Geophysicists of Alberta (APEGGA).

Employment and Advancement

(section revised JANUARY 2006)

To find employment, graduates of avionics programs may be required to move to where the work is. Often, that is in sparsely populated northern communities.

Most avionics technologists are employed in general aviation and aerospace industries, and related industries such as accessory and equipment manufacturers. They are also employed by:

- air transportation firms
- federal government transportation departments
- the armed forces
- ground based communications and navigation organizations.

Most employers have company training programs to improve technologists' technical and supervisory skills. Additional training is also available from equipment and aircraft manufacturers. While most technologists are employed in their area of specialization, some advance to supervisory or management positions.

Avionics technologists are part of the larger National Occupational Classification 2244: Aircraft Instrument, Electrical and Avionics Mechanics, Technicians and Inspectors. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Public Administration**
- **Transportation and Warehousing**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation**.

About 950 Albertans are employed in the Aircraft Instrument, Electrical and Avionics Mechanics, Technicians and Inspectors occupational group which is expected to grow 2.1 to 3.1 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 10 to 30 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since avionics technologists form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for avionics technologists.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans working part-time or full-time in the Aircraft Instrument, Electrical and Avionics Mechanics, Technicians and Inspectors occupational group earned **up to $95,500 per year.** Those with three years of experience earned **$27,100 to $52,500 a year**. The average salary was **$42,800 per year**.

For more detailed information, see ASET's Annual Salary Surveys.

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Society of Engineering Technologists (ASET) website: www.aset.ab.ca

Canadian Aviation Maintenance Council (CAMC) website: www.camc.ca

Related Occupational Profiles

Aircraft Maintenance Engineer
Canadian Forces Personnel - Non Commissioned
Electrical Engineering Technologist
Electronics Engineering Technologist
Engineering Design and Drafting Technologist

Related High School Subjects

Design Studies; Electro-Technologies; Information Processing; Language Arts; Mathematics; and Science (Physics)

Related Post-Secondary Fields of Study

Engineering and Science Technologies

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4166 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Baker

Produced FEBRUARY 2006

Bakers prepare and bake breads, cakes, cookies, pastries, pies and other baked goods.

NOC Number(s): 6252
Minimum Education: Apprenticeship Trade - Grade 9
Employment Outlook: Employment turnover plus below average occupational growth in Alberta
Interests: **M O d**

Duties

Duties vary from one position to another but, in general, bakers:

- weigh, measure and mix ingredients according to recipes or special customer instructions
- cut and form dough
- mix and deposit batters
- prepare fillings
- use ovens to bake products
- fry doughnuts
- decorate baked goods
- clean bowls and pans after use
- prepare production schedules to determine the variety and quantity of goods to be produced
- purchase, stock and rotate ingredients and supplies
- operate production machinery.

Working Conditions

Bakers work in clean, well-ventilated and well-lit environments. They generally work a 40-hour, five-day week that often include shift work. There is a slight risk of injury when operating hot ovens and production equipment.

Bakers routinely lift ingredient containers weighing up to 20 kilograms.

Personal Characteristics

Bakers need the following characteristics:

- good health and physical stamina
- manual dexterity
- a responsible attitude about ensuring that public health standards are met.

They should enjoy creating things with their hands.

Educational Requirements

To work in Alberta, bakers must be ONE of the following:

- registered apprentices
- certified journeymen
- working for an employer who is satisfied that they have the skills and knowledge expected of certified journeymen
- self-employed.

To **register** with **Alberta Apprenticeship and Industry Training**, apprentices must:

- have at least an Alberta Grade 9 education (or equivalent) or pass an entrance exam
- find a suitable employer who is willing to hire and train an apprentice. Most employers prefer to hire high school graduates and may select apprentices from among their current employees.

The **term of apprenticeship** is three years (three 12-month periods) that include a minimum of 1,560 hours of on-the-job training and eight weeks of technical training each year. High school students can become apprentices and gain credits toward apprenticeship training and a high school diploma at the same time through the Registered Apprenticeship Program (RAP).

Applicants who have related training or work experience may be eligible for credit or certification.

Baker apprentices may attempt the Interprovincial Exam in the final period of their apprenticeship training and, if successful, are granted a Red Seal (which is recognized in most parts of Canada).

Technical training is arranged by Alberta Apprenticeship and Industry Training and is currently offered at:

- the Northern Alberta Institute of Technology (NAIT) in Edmonton
- the Southern Alberta Institute of Technology (SAIT) in Calgary.

Outside the apprenticeship program, the following post-secondary institutions offer related training:

- The **Northern Alberta Institute of Technology (NAIT)** in Edmonton offers a one year Baking certificate program. The entrance requirement is Grade 10 including English and math.
- The **Southern Alberta Institute of Technology (SAIT)** in Calgary offers a two year Baking and Pastry Arts diploma program. The entrance requirement is a Grade 10 math and English.

Pre-employment programs for prospective apprentices and continuing education programs for journeymen may be offered on an as needed basis by the institution(s) listed above or other schools.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

Bakers are employed in retail and wholesale bakeries, supermarkets, hospitals, institutions, hotels, catering companies, restaurants and camps.

Experienced bakers may advance to supervisory positions, start their own businesses or transfer their skills to related occupations such as cook (for more information, see the Cook occupational profile), pastry cook, cake decorator, baking instructor or supply-company salesperson. Alberta certified journeyman bakers who have the supervisory or management skills required by industry may apply for an Achievement in Business Competencies Blue Seal by contacting Alberta Apprenticeship and Industry Training.

In Alberta, over 75 per cent of people employed as bakers are employed in the following industries:

- **Retail Trade**
- **Accommodation and Food Services**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

About 4,750 Albertans are employed in the Bakers occupational group which is expected to grow 0.5 to 1.5 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 20 to 80 **new** positions will be created each year **in addition** to job openings created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Apprentice bakers earn at least 65 per cent of the journeyman rate in their place of employment in the first year, 75 per cent in the second year and 85 per cent in the third. According to the Alberta Provincial Apprenticeship Committee for this trade, journeyman wage rates vary, but generally range from **$10 to $16.50 an hour plus benefits** (2005 estimate).

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Bakers occupational group working part-time or full-time earned from **$12,100 to $44,600 a year.** The average salary was **$21,500 a year.**

Other Sources of Information

Alberta Apprenticeship and Industry Training website: www.tradesecrets.org

Post-secondary institution calendars or websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Related Occupational Profiles

Chef
Cook
Food Science Technologist

Related High School Subjects

Foods; Mathematics; and Physical Education

Related Post-Secondary Fields of Study

Trades, Industrial and Related Training

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Banking/Investment Manager

Produced DECEMBER 2005

Banking and investment managers plan and direct the activities of departments or branches in financial establishments such as banks, credit unions, trust companies, mortgage firms and mutual fund investment companies.

NOC Number(s): 0122.1
Minimum Education: 2 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **D M s**

Duties

Banking and investment managers are responsible for the success of their departments or branches. Duties and responsibilities vary from one department and institution to another but, in general, banking and investment managers:

- sell banking and investment products and services
- identify customer needs and preferences by responding to questions and initiating customer interactions
- help customers clarify their long term financial goals, provide information and present customized plans to achieve goals
- ensure that deposit, investment and loan sales and services meet regulatory and company policy requirements
- follow security procedures and report any unusual or fraudulent activity
- plan and budget for the operation of their establishments
- direct procedures such as accepting loan applications and approving credit
- develop customer service procedures
- deal with customer complaints
- manage staff and facilitate employee development.

Bank managers in small branches may supervise banking procedures directly and process loan applications. In larger branches, managers supervise the work of account managers and other banking representatives.

Banking and investment managers in all circumstances must keep up to date with changes (for example, new legislation) that affect their industry and work in close co-operation with advertising and sales departments. They are sometimes required to represent their organizations in the community and are often involved in service clubs and volunteer work.

Working Conditions

Banking and investment managers often work extended hours. Some travel may be required to visit customers. Particularly at the beginning of their careers, they may be required to move fairly frequently.

Personal Characteristics

Banking and investment managers need the following characteristics:

- a high degree of personal integrity
- good communication skills
- strong interpersonal skills
- good judgment and problem-solving skills
- sales ability (persistence and persuasion)
- strong leadership skills
- the ability to work in a hectic environment and multi-task.

They should enjoy supervising and co-ordinating the work of others, having clear rules and methods to guide their activities, and working with people.

Educational Requirements

Many bank managers have worked their way up by gaining experience in management trainee and junior management positions. However, employers generally prefer to hire applicants who have **a related university degree or post-secondary diploma**. Managers who specialize in areas such as credit management, selling investments or financial planning must have appropriate training (for more information, see the Credit/Loans Manager, Financial Planner and Investment Advisor occupational profiles).

Most organizations have extensive training programs that allow trainees to work their way up through the ranks. Post-secondary graduates can complete this training period in less time.

Commerce, business administration and related degree and diploma programs are offered by many post-secondary institutions. The following institutions offer degree programs with specializations in finance or financial services:

- **Lakeland College** in Vermilion offers a Bachelor of Applied Financial Services degree program. The entrance requirement is a recognized two year Business Administration diploma.
- The **Northern Alberta Institute of Technology (NAIT)** in Edmonton offers a Bachelor of Applied Business-Finance degree program. The entrance requirement is a grade point average (GPA) of 65 per cent, 2.3/4 or C+ in a recognized two year business diploma program that includes course work in the following areas: Basic Accounting, Business Math, Micro and Macro Economics, Statistics, Business Communications and an Introductory Computer Course. An Introductory Investment course is recommended.
- The **University of Alberta** in Edmonton offers four year and five year (co-op) Bachelor of Commerce degree programs and Master of Business Administration (MBA) programs with a specialization in finance. The entrance requirement for the bachelor's degree program is a competitive average in a pre-professional year that includes specified courses in English, economics, math and statistics.
- The **University of Calgary** Haskayne School of Business offers four year and five year Bachelor of Commerce degree programs and a MBA program with a specialization in finance. The entrance requirement for the bachelor's degree program is a competitive average in English Language Arts 30-1 or English 30, Pure Math 30 or Math 30, and three of the following: Math 31, Social Studies 30, Biology 30, Chemistry 30, Physics 30, Science 30, a 30 level language other than English, one five credit Grade 12 subject.
- The **University of Lethbridge** offers a four year Bachelor of Management degree program and post-diploma programs with a specialization in finance. The entrance requirement for the bachelor's degree program is an average of at least 65 per cent in English Language Arts 30-1 or English 30, Pure Math 30 or Math 30 (or equivalent), two other approved 30-level subjects and one other approved Grade 12 subject. The entrance requirement for the post-diploma program is a recognized two year Business Administration/Management diploma.

Post-secondary institutions throughout the province offer university transfer programs that allow students to apply up to two years of study toward university bachelor's degree programs. It is the student's responsibility to ensure that the courses they choose to take will be accepted for credit at the insitution to which they wish to transfer.

Two year financial planning or services diploma programs are offered by the following Alberta post-secondary institutions:

- **Lakeland College** in Vermilion
- **Medicine Hat College**
- **Northern Alberta Institute of Technology (NAIT)** in Edmonton
- **Red Deer College**.

Business administration and management programs are offered by:

- **Alliance University College** in Calgary
- **Athabasca University**
- **Canadian University College** in College Heights
- **Grande Prairie Regional College**
- **Keyano College** in Fort McMurray
- **The King's University College** in Edmonton
- **Lakeland College** in Vermilion and Lloydminster
- **Lethbridge Community College**
- **Medicine Hat College** in Medicine Hat and Brooks
- **Mount Royal College** in Calgary
- the **Northern Alberta Institute of Technology (NAIT)** in Edmonton and at various locations
- **Northern Lakes College** in Grouard and other locations

- **Portage College** in Lac La Biche
- **Red Deer College**
- the **Southern Alberta Institute of Technology (SAIT)** in Calgary.

Minimum admission requirements for two year financial planning and business administration programs vary but generally include a high school diploma with a specified minimum average or minimum marks in particular courses (e.g. Grade 12 English).

For current information about specific programs and their admission requirements, please check post-secondary calendars or websites.

Employment and Advancement

(section revised JANUARY 2006)

Banking and investment managers are employed by:

- banks
- credit unions
- trust companies
- mortgage investment companies
- securities firms.

Advancement opportunities vary depending on the size and type of company. Some employers prefer to train their own personnel and promote from within.

Banking/investment managers are part of the larger National Occupational Classification 0122: Banking, Credit and Other Investment Managers. In Alberta, over 75 per cent of people employed in this classification work in the **Finance, Insurance and Real Estate** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Finance, Insurance and Real Estate industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Employment growth is best for investment managers.

Over 4,100 Albertans are employed in the Banking, Credit and Other Investment Managers occupational group which is expected to grow 1.3 to 2.3 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 50 to 100 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since banking/investment managers form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for banking/investment managers.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

According to the **2005 Alberta Wage and Salary Survey**, part-time and full-time **starting** salaries for Albertans working in the Banking, Credit and Other Investment Managers occupational group ranged from **$23,500 to $109,500 a year.** The average salary for people in this occupational group was **$68,200 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Canadian Securities Institute website: www.csi.ca

Investment Dealers Association website: www.ida.ca

Related Occupational Profiles

Credit/Loans Manager
Financial Analyst
Financial Customer Service Representative
Financial Planner
Insurance Agent/Broker
Investment Advisor
Management Consultant
Mortgage Agent

Related High School Subjects

Communication Technology; Enterprise and Innovation; Financial Management; Information Processing; Language Arts; Legal Studies; Management and Marketing; and Mathematics

Related Post-Secondary Fields of Study

Business, Management and Administrative Studies

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Banquet Manager

Produced FEBRUARY 2004

Banquet managers plan, organize and direct the service of food and beverages for banquets and other social functions.

NOC Number(s): 0631
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **D M S**

Duties

Duties and responsibilities vary from one position to another but, in general, banquet managers:

- discuss requirements with customers and take detailed notes about banquet requirements
- develop banquet menus in consultation with caterers, chefs or cooks
- prepare budgets
- determine requirements for serving staff and supplies
- supervise everything from the set up prior to the function to the clean up afterward
- develop work schedules and supervise food services during the function
- maintain proper liquor controls and monitor alcohol service
- ensure that equipment is properly cleaned and maintained
- follow up with clients after functions and deal with customer complaints
- hire, train and supervise staff to ensure that service standards are met.

In smaller organizations, banquet managers may assist staff with functions such as setting up the room.

In larger organizations, the duties listed above may be divided among several managers and supervisors. For example, where banquet managers and catering managers have separate roles, catering managers discuss banquet requirements with customers and work with chefs and food and beverage managers to develop menus.

Working Conditions

Banquet managers often work long hours that include evenings, weekends and holidays. Assisting staff may sometimes involve heavy lifting.

Personal Characteristics

Banquet managers need the following characteristics:

- good communication, supervisory and problem-solving skills
- excellent organizational skills
- the ability to pay close attention to details
- the ability to work alone or as part of a team
- the ability to remain calm while working in close quarters with others during busy periods
- flexibility and creativity.

They should enjoy:

- co-ordinating information and the activities of others
- setting work schedules, monitoring staff and controlling inventory
- negotiating arrangements with suppliers and clients.

Educational Requirements

(section revised JULY 2005)

There are no standard minimum education requirements for banquet managers but related education is becoming increasingly important. Most employers require banquet managers to have food and beverage service training, food safety training and experience in dining room management. Food allergy training is an asset.

In Alberta, the following institutions offer post-secondary programs related to food service management.

- The **Northern Alberta Institute of Technology** in Edmonton offers a:
  - one year certificate and a two year Hospitality Management diploma program. The minimum education requirement for both programs is Grade 11 including English and math.
  - two year Food and Nutrition Management diploma program. The entrance requirement for this program is a high school diploma with English 30 or 33, Math 20 or 23, Biology 20 or 30 and any other 30 level science.
- **Red Deer College** offers one year certificate and two year diploma programs in Hospitality and Tourism with a specialization in food and beverage management. The entrance requirement is a high school diploma or equivalent.
- **Robertson College** offers a 40-week International Hospitality and Hotel Management program. The entrance requirement is a high school diploma with a Grade 12 English.
- The **Southern Alberta Institute of Technology (SAIT)** in Calgary offers a two year Hotel and Restaurant Management diploma program. The entrance requirement is a high school diploma or equivalent with English 30 or 33 and Pure or Applied Math 30 or Math 33.
- **Trend College**, a private vocational school in Edmonton, offers a 34 week Hotel and Tourism Management program and a 50 week International Hotel and Tourism Management Studies program. Applicants must be at least 19 years of age, have the approval of the Program Coordinator after undergoing a personal interview and have a high school diploma or equivalent.
- The **University of Calgary** offers a four year Bachelor of Hotel and Resort Management degree program that also may be taken as a co-op program. The entrance requirement is a high school diploma with an average of at least 70 per cent in English 30, Pure Math 30 and three other appropriate subjects plus a SAIT diploma in Hotel and REstaurant Management (or equivalent) with a grade point average of 3.0/4 or above. The University of Calgary also offers four year and five year co-op Bachelor of Commerce degree programs in Tourism and Hospitality Management. The entrance requirement for the B.Comm. program is a high school diploma with an average of at least 70 per cent in English 30, Pure Math 30 and three other appropriate subjects.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Post-secondary institutions throughout the province offer university transfer programs that allow students to apply up to two years of study toward university bachelor's degree programs. It is the student's responsibility to ensure that the courses they choose to take will be accepted for credit at the institution to which they wish to transfer.

Employment and Advancement

(section revised JANUARY 2006)

Banquet managers are employed by hotels and hospitality centres such as convention centres. Advancement opportunities vary depending on the banquet manager's qualifications and the size and nature of the employing organization.

Banquet managers are part of the larger National Occupational Classification 0631: Restaurant and Food Service Managers. In Alberta, most people employed in this classification work in the **Accommodation and Food Services** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Accommodation and Food Services industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 13,800 Albertans are employed in the Restaurant and Food Service Managers occupational group which is expected to grow 1.5 to 2.5 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 200 to 350 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since banquet managers form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for banquet managers.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised SEPTEMBER 2005)

Banquet managers may receive gratuities in addition to a base salary.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Restaurant and Food Service Managers occupational group working part-time or full-time earned from **$13,000 to $179,900 a year.** The average salary was **$30,900 a year.**

Other Sources of Information

(section revised OCTOBER 2005)

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Hotel and Lodging Association website: www.albertahotels.ab.ca

Alberta Restaurant and Foodservices Association website: www.arfa.net

Alberta Tourism Education Council (ATEC) website: www.atec.ca

Related Occupational Profiles

Accommodation Manager
Caterer
Chef
Food and Beverage Service Supervisor In Formal Dining Rooms
Food Service Supervisor
Restaurant Manager
Special Event Co-ordinator

Related High School Subjects

Enterprise and Innovation; Financial Management; Foods; Language Arts; Logistics; Management and Marketing; Mathematics; Science (Biology); and Tourism Studies

Related Post-Secondary Fields of Study

Business, Management and Administrative Studies; and Human Ecology, Fashion and Food Sciences

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For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Bartender

Produced MARCH 2003

Bartenders mix and serve drinks and control the beverages leaving the bar in cocktail lounges, restaurants and other establishments where liquor is served.

NOC Number(s): 6452
Minimum Education: High school diploma
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **M S d**

Duties

Bartenders may serve customers directly at the bar or prepare drinks to be served by other staff members. In addition to serving beer and wine, they mix ingredients such as liquor, fruit juices, cream, coffee, soft drinks, water, sugar and bitters in the right proportions to prepare cocktails and other drinks. They may also make cappuccino, espresso and other special coffees.

In general, bartenders have the following duties and responsibilities:

- mix and invent drinks
- serve alcohol responsibily (including refusing further service when appropriate)
- promote their establishments
- wash glassware and keep the bar area clean and orderly
- arrange displays of bar stock and glassware
- prepare garnishes
- serve snacks or food items to people seated at the bar
- keep an inventory of liquors, wines, beers, soft drinks, cream, fruits and fruit juices
- order supplies
- operate computerized point of sales systems
- collect payments for drinks and balance cash receipts
- monitor video lottery terminals.

In larger operations, bartenders may use machines that automatically mix and dispense drinks. However, they still need to know how to fill unusual orders and how to do the work manually if equipment is not functioning properly.

Bartenders may also have supervisory responsibilities such as:

- planning, organizing and controlling the operations of a cocktail lounge or bar
- co-ordinating beverage requirements with other supervisory staff
- planning bar menus
- assisting with advertising and promotions.

Working Conditions

Bartenders often work nights, weekends, holidays and/or split shifts. They may be required to lift heavy items such as kegs of beer.

Personal Characteristics

Bartenders need the following characteristics:

- the strength and stamina required to stand for long periods of time and lift kegs and cases of beverages
- good motor co-ordination
- good judgment and a responsible attitude when serving alcohol, combined with the ability to maintain customer satisfaction
- honesty

- patience
- the math skills required to handle money accurately
- a good memory for details
- the ability to get along well with others.

They should enjoy having clear rules and organized methods, serving people and taking responsibility for bar operations.

Bartenders must be able to perform their duties cheerfully, courteously and efficiently. They are expected to listen to customers sympathetically, without getting personally involved. They also must co-operate with other food and beverage service workers to maintain high standards of customer service.

Educational Requirements

(section revised NOVEMBER 2005)

Bartenders must be at least 18 years of age. They must be able to measure accurately to prepare drinks quickly and without waste, especially during busy periods, and need a working knowledge of:

- cocktail recipes
- the characteristics of wine, beer and spirits
- liquor laws
- Alberta Gaming and Liquor Commission policies and regulations.

Server intervention training such as the "It's Good Business" course offered by the Alberta Hotel and Lodging Association (see below), food safety training and food allergy training are definite assets when looking for employment.

Bartenders may train on the job under the direction of an experienced bartender or take related training programs. In Alberta, the following private vocational schools offer training programs:

- the **Fine Art Bartending School** in Edmonton offers a 50 hour (day or evening) Bartending program. Applicants must be at least 18 years of age, have at least Grade 7 or equivalent education, be able to read and write in English, and be in good health.
- the **Executive School of Bartending** in Calgary offers a 60 hour Bar Mixology program. Applicants must have a high school diploma with English 30 or 33 or equivalent.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

The **Alberta Hotel and Lodging Association** offers a half-day "It's Good Business" course for people who are responsible for serving alcohol. Courses are delivered as needed at businesses throughout the province.

The **Alberta Tourism Education Council (ATEC)** has developed a process for Bartender Certification that is recognized in the tourism and hospitality industry across Canada.

Anyone interested in becoming a bartender is advised to contact practicing bartenders or their employers to enquire about recommended training options.

Employment and Advancement

(section revised JANUARY 2006)

Bartenders are employed by:

- hotels
- restaurants
- cocktail lounges
- convention facilities
- other businesses that serve alcoholic beverages.

Some bartenders in large establishments become head bartenders, wine stewards, restaurant managers or food and beverage managers. ATEC certification is an asset when applying for advancement.

Some hotels offer training programs designed to prepare employees for positions such as food and beverage controller, or assistant food and beverage manager.

In Alberta, over 75 per cent of people employed as bartenders are employed in the **Accommodation and Food Services** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Accommodation and Food Services industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

About 4,250 Albertans are employed in the Bartenders occupational group which is expected to grow 1.0 to 2.0 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 40 to 90 **new** positions will be created each year **in addition** to job openings created by employment turnover. There is a fairly high employment turnover rate in this occupation because many bartenders travel and work abroad or move into other occupations.

Salary

(section revised OCTOBER 2005)

Hourly wages for bartenders vary greatly depending on the type of establishment. Tips are earned by providing quality service. In bars where servers deliver drinks to customers, bartenders often receive a portion of servers' tips.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Bartenders occupational group working part-time or full-time earned from **$9,200 to $31,000 a year.** The average salary was **$11,900 a year.**

Tips may add considerably to bartenders' incomes.

Other Sources of Information

(section revised OCTOBER 2005)

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Hotel and Lodging Association website: www.albertahotels.ab.ca

Alberta Restaurant and Foodservices Association website: www.arfa.net

Alberta Tourism Education Council website: www.atec.ca

Related Occupational Profiles

Casino Dealer
Food and Beverage Server
Restaurant Manager

Related High School Subjects

Language Arts; Mathematics; Physical Education; and Tourism Studies

Related Post-Secondary Fields of Study

Personal and Food Services

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Beekeeper

Produced MARCH 2005

Beekeepers manage and keep colonies of honey bees in apiaries (bee-yards) to produce honey and hive by-products (e.g. pollen, bees wax), pollinate crops, or produce queens and bees.

NOC Number(s): 8251
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus below average occupational growth in Alberta
Interests: **D M O**

Duties

Beekeeping duties vary with the seasons. The busiest time is spring, summer and fall when beekeepers:

- prepare colonies for production and wintering
- inspect colonies for vitality, queen performance, level of food reserves and the presence of parasites or disease
- maintain healthy colonies by feeding bees, replacing queen bees, dividing colonies, and controling diseases, parasites and predators
- follow food safety and traceability guidelines and regulations when harvesting and processing honey and other hive products
- market products to consumers or packers
- maintain beekeeping equipment and the honey house
- keep records of production and colony conditions.

In winter, beekeepers regularly check colonies in wintering facilities, and repair and maintain hive boxes and equipment in preparation for spring.

Beekeepers use equipment such as special protective clothing, bee smokers, hive tools and carpentry tools. Commercial beekeepers also drive trucks and fork-lifts, and operate and maintain machines ranging from extractors and honey processing equipment to grass mowers and chemical sprayers (for controlling grass around hives). Beekeepers also use pesticides and antibiotics in their bee colonies.

Working Conditions

Beekeeping requires lifting items weighing up to 25 kilograms or more, and working long hours in summer.

Personal Characteristics

Beekeepers need the following characteristics:

- self-motivated
- good organizational skills
- good physical health, the ability to withstand bee stings and no allergies to honey bee stings
- able to integrate new ideas and methods in their operations
- problem solving skills
- good numerical skills
- mechanical aptitude
- good interpersonal and time management skills.

They should enjoy taking a methodical approach to their work.

Educational Requirements

Beekeepers must be knowledgeable about:

- bee biology and behavior
- nectar sources and honey quality
- the identification and control of diseases, parasites and predators that affect bees
- the proper use of pesticides, antibiotics and chemicals
- seasonal and industry trends
- marketing methods
- provincial legislation (Bee Act and Bee Regulation)
- food safety and employment regulations
- financial and production record keeping.

Inexperienced beekeepers are advised to obtain related experience by working with established beekeepers.

Short courses are offered periodically by Alberta Agriculture, Food and Rural Development and local beekeeper associations.

Other Requirements

Anyone who has bees or beekeeping equipment is required to register annually with Alberta Agriculture, Food and Rural Development.

Employment and Advancement

(section revised JANUARY 2006)

Large beekeeping operations often employ beekeeping assistants over the summer months. Some employ assistants year-round.

Beekeepers may start their own businesses or buy an established apiary. Setting up a commercial beekeeping business requires considerable capital investment in addition to the cost of land.

Beekeepers are part of the much larger National Occupational Classification 8251: Farmers and Farm Managers. In Alberta, most people employed in this classification work in the **Agriculture** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Agriculture industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 35,950 Albertans are employed in the Farmers and Farm Managers occupational group which is expected to grow up to 0.5 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover. (**Note**: Since beekeepers form less than two per cent of the larger occupational group on which this forecast is based, only a portion of the new positions will be beekeepers.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Beekeepers' incomes depend on weather conditions, production costs, the current market value of honey, the amount of honey or pollen produced per hive and monies received for pollination services or the sale of queens and honey bees.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Farmers and Farm Managers occupational group working part-time or full-time earned from **$16,200 to $83,200 a year.** The average salary was **$39,000 a year.**

Other Sources of Information

Alberta Agriculture, Food and Rural Development "Commercial Honey Industry" webpage: www1.agric.gov.ab.ca/$department/deptdocs.nsf/all/agdex2743?opendocument

Alberta Beekeepers Association (ABA) website: www.albertabeekeepers.org

Related Occupational Profiles

Entomologist
Farm Worker/Technician
Market Gardener

Related High School Subjects

Agriculture; Enterprise and Innovation; Financial Management; Management and Marketing; Mathematics; Physical Education; and Science (Biology)

Related Post-Secondary Fields of Study

Agriculture and Related Technologies

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Binding and Finishing Machine Operators

Produced DECEMBER 2005

Binding and finishing machine operators set up and operate machines and equipment that turn large sheets of paper from the printing press into finished print materials such as books, brochures and presentation folders.

NOC Number(s): 9473.1, 9473.2
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus below average occupational growth in Alberta
Interests: **O M i; O M i**

Duties

Binding and finishing machine operators run specialized equipment and machines that collate, cut, fold, gather, glue, stitch and drill printed material. Their duties vary depending on the machine but, in general, binding and finishing machine operators:

- review work orders
- set up, adjust and operate machines and equipment
- input instructions and monitor the operation of computerized machines and equipment
- trouble-shoot problems and make adjustments as required
- perform routine maintenance.

Binding and finishing machine operators may operate a wide variety of machines including ones that:

- fold, cut or collate pages
- drill holes in pages
- die cut pages
- insert materials into cerlox, wire or adhesive bindings
- apply glue on the ends of note pads
- emboss, imprint or metal foil materials
- wire stitch collated materials
- laminate materials
- package printed materials.

Working Conditions

Binding and finishing machine operators work in large industrial plants or, in smaller companies, in industrial bays. Shift work may be required and working overtime to meet print deadlines is common.

Binding and finishing machine operators often stand for long periods and do a considerable amount of bending and reaching. They may be required to lift heavy packages of paper.

Personal Characteristics

Binding and finishing machine operators need the following characteristics:

- good hand/eye co-ordination and full body mobility
- normal hearing and vision
- the ability to measure and calculate measurements accurately
- ability to pay attention while performing repetitive tasks
- mechanical ability
- the ability to work safely and efficiently under the pressure of deadlines.

They should enjoy working with computerized and mechanical equipment, following routines, and performing set tasks.

Educational Requirements

Binding and finishing machine operators generally acquire their skills by learning on the job. Printing and publishing is an evolving industry and machine operators must be prepared to keep learning new skills.

There are no standard education requirements for binding and finishing machine operators. Employers may prefer to hire high school graduates who have experience operating machines or equipment, or graduates of related post-secondary programs. A security clearance may be required if the operator will be working with sensitive materials.

In Alberta, the following institutions offer related post-secondary programs.

- **NorQuest College** in Edmonton offers a 20 week Press and Bindery Operator program. The entrance requirement is Grade 10 English and math. Graduates of this program may transfer credit toward the SAIT diploma program.
- The **Southern Alberta Institute of Technology (SAIT)** in Calgary offers a two year Digital Graphics Communications diploma program. The entrance requirement is a high school diploma with English Language Arts 30-1 or 30-2 (or English 30 or 33).

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

(section revised JANUARY 2006)

Binding and finishing machine operators are employed by:

- trade binderies
- commercial printing companies
- large organizations that have in-house printing, binding and finishing departments
- newspapers
- magazines
- publishing companies.

Many binderies have a small core staff and hire extra staff on a temporary basis when needed to meet contract deadlines.

Newly hired machine operators are usually trained on simpler or lighter equipment. As they gain experience, they are trained on more complex equipment. Machine operators who have experience running a variety of machines may become supervisors.

In Alberta, most people employed as binding and finishing machine operators work in the **Other Manufacturing** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment in the Other Manufacturing industry (for example, the growth of electronic information distribution is expected to have a negative effect on binderies)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

About 400 Albertans are employed in the Binding and Finishing Machine Operators occupational group which is expected to grow 0.5 to 1.5 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Binding and Finishing Machine Operators occupational group working part-time or full-time earned from **$14,500 to $52,300 a year.** The average salary was **$31,400 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Northern Alberta Printers Association (NAPA) website: www.albertaprinters.com

Printing and Graphics Industries Association of Alberta (PGIA) website: www.pgia.ca

Related Occupational Profiles

Digital Printing Machine Operator
Pre-Press Technician
Printing Press Operator

Related High School Subjects

Electro-Technologies; Mathematics; Mechanics; and Physical Education

Related Post-Secondary Fields of Study

Trades, Industrial and Related Training

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Biochemist

Produced SEPTEMBER 2005

Biochemists study the chemical make-up of living matter and the molecular basis for processes that occur in cells. They develop medical, agricultural, food science, pharmacological, industrial, environmental and other practical applications.

NOC Number(s): 2112
Minimum Education: 4 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **I O D**

Duties

Biochemistry combines the fields of biology and chemistry. In general terms, biochemists study the chemistry of biological molecules to better understand events and processes such as how:

- living cells reproduce, acquire energy, grow and develop
- enzymes function (metabolism)
- gene regulation is controlled
- organisms adapt to stresses.

Biochemists may specialize in a variety of areas:

- the chemistry of cellular processes such as metabolism, growth and aging
- the neurochemistry of the brain
- vitamins, DNA, hormones, enzymes and other proteins
- the three-dimensional structure of biological macromolecules
- the molecular basis of how the immune system functions
- mutations in organisms that lead to cancer and other diseases
- the way cells store and express genetic information
- genetic engineering
- biochemical diagnostic tests
- recombinant DNA technology for the production of pharmaceutically and industrially useful proteins
- environmental analysis of air and water quality, and the interdisciplinary study of human impacts on the environment.

Biochemists in forensic science may specialize in the use of DNA fingerprinting techniques for identification purposes, or in the analysis of small molecular weight compounds such as alcohol and drugs. They may be called upon to give evidence in courts of law.

Biochemists often work in interdisciplinary teams with physiologists, pharmacologists, plant biologists, microbiologists, chemists, agronomists and other professionals. During laboratory research, they often supervise the work of technicians and technologists.

Working Conditions

Biochemists work in offices and laboratories. When experiments do not fit into a normal eight hour workday, they may be required to work evenings and weekends. They must observe safety precautions when working with contaminants such as viruses or other biohazards.

Personal Characteristics

Biochemists need the following characteristics:

- curiosity and imagination
- persistence and a willingness to work long hours

- problem solving skills
- good oral and written communication skills
- willingness to do the reading required to keep up with new developments and discoveries.

They should enjoy synthesizing information, finding innovative approaches, using equipment and instruments to perform tasks requiring precision, and co-ordinating and supervising the work of others.

Educational Requirements

Most biochemists begin their post-secondary education by completing a Bachelor of Science (B.Sc.) degree in biochemistry or a related science such as chemistry, biology, physics, microbiology, physiology, pharmacology or genetics. Economics and management courses are a definite asset for biochemists who wish to eventually move into management positions.

Independent investigators who determine and define research programs must have a master's or doctoral (PhD) degree in biochemistry. To work in a hospital or private health care laboratory, or in some specialized health care industries, PhD biochemists should take an additional two to three year post-doctoral course to become certified clinical chemists.

In Alberta, the following institutions offer degree programs in biochemistry:

- The **University of Alberta** in Edmonton offers four year B.Sc. honours and specialization degrees. The entrance requirement is an average of 65 to 80 per cent in English Language Arts 30-1 (or English 30), Math 30 or Pure Math 30, Biology 30, Chemistry 30 and Physics 30. The university also offers master's and doctoral degree programs in biochemistry.
- The **University of Calgary** offers a four year B.Sc. program in biochemistry. The entrance requirement is an average of at least 70 per cent in English 30, Math 30 or Pure Math 30, Chemistry 30, Biology 30 and one other appropriate Grade 12 subject. Math 31 and Physics 30 are recommended. The university also offers master's and doctoral degree programs in biochemistry.
- The **University of Lethbridge** offers a four year B.Sc. program in biochemistry with a co-operative education option. The entrance requirement is an average of at least 65 per cent in English Language Arts 30-1 (or English 30), Math 30 or Pure Math 30 (or Applied Math 30 or at least 75 per cent in the University of Athabasca's Math 101), Biology 30, Chemistry 30 and one other 30-level subject. Math 31 and Physics 30 are recommended. The university also offers master's and doctoral degree programs in biochemistry.

For information about other related programs of study, see the appropriate occupational profiles (e.g. Biotechnologist, Chemist, Geneticist, Microbiologist, Pharmacologist, Physiologist, Physicist).

Post-secondary institutions throughout the province offer university transfer programs that allow students to apply up to two years of study toward university bachelor's degree programs. It is the student's responsibility to ensure that the courses they choose to take will be accepted for credit at the institution to which they wish to transfer.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

(section revised JANUARY 2006)

Biochemists are employed by the following types of employers:

- provincial and federal governments
- universities and medical schools
- biotechnology companies
- pharmaceutical companies
- other companies in the oil, cosmetics, food and beverage, and environmental industries.

Biochemists who have Ph.D.s usually undergo at least two years of post-doctoral training before they are considered eligible for positions in academic institutions, industrial research laboratories or governmental agencies. Those who have B.Sc. or master's degrees usually work as technicians or laboratory assistants under the supervision of more experienced biochemists. Some biochemistry graduates work in sales for biotechnology and pharmaceutical firms.

Biochemists are part of the larger National Occupational Classification 2112: Chemists. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Petrochemicals, Rubber, Plastics and Chemicals Manufacturing**
- **Health Care and Social Assistance**
- **Professional and Technical Services**

- **Public Administration**.

The employment outlook in this occupation will be influenced by a wide variety of factors including the following:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation**.

Over 1,050 Albertans are employed in the Chemists occupational group which is expected to grow 1.1 to 2.1 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 10 to 30 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since biochemists form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for biochemists.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Biochemists' salaries vary considerably depending on whether they have a B.Sc. degree and are working as technicians or have a Ph.D. degree and are conducting research.

According to the **2005 Alberta Wage and Salary Survey**, Albertans working part-time or full-time in the Chemists occupational group earned **up to $104,400 a year**. Those with three years of experience earned from **$61,400 to $95,000 a year.** The average salary was **$83,900 a year**.

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Canadian Council for Human Resources in the Environment Industry website: www.cchrei.ca

Canadian Society for Chemistry website: www.chemistry.ca

Canadian Society of Biochemistry, Molecular and Cellular Biology website: www.csbmcb.ca

Canadian Society of Clinical Chemists and Canadian Academy of Clinical Biochemistry websites: www.cscc.ca

Chemical Institute of Canada website: www.cheminst.ca

Related Occupational Profiles

Biologist
Biotechnologist
Chemist
Ecologist
Environmental Auditor
Environmental Education Specialist
Forensic Laboratory Analyst
Geneticist
Hazardous Waste Management Technologist
Microbiologist
Pathologist
Physiologist

Related High School Subjects

Forestry; Language Arts; Mathematics; Science (Biology; Chemistry; and Physics); and Wildlife

Related Post-Secondary Fields of Study

Sciences

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Biological Technician

Produced SEPTEMBER 2005

Biological technicians perform routine analysis and technical duties in the field, in the laboratory or both. They provide technical support and services for scientists and engineers working in fields such as agriculture, environmental science, resource management, plant and animal biology, microbiology, cell and molecular biology and health sciences.

NOC Number(s): 2221.2
Minimum Education: 2 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **M o i**

Duties

Biological technicians' duties and responsibilities vary greatly depending on their training and experience and where they are employed. They may:

- conduct field and laboratory tests
- operate and maintain equipment for field tests and surveys
- isolate, identify and prepare specimens for study
- grow cultures under controlled conditions
- collect field data
- maintain quality control/assurance
- analyze data and report results.

Depending on the type of technical work, biological technicians also may:

- conduct or supervise operational programs such as fish hatcheries or greenhouse and livestock production programs
- conduct biological, microbiological, chemical and biochemical tests
- conduct plant and animal inventory surveys to gather information on plant and animal distribution and abundance
- prepare progress reports on surveys for research biologists
- set up and maintain specific or general laboratory areas
- prepare reagents, perform analyses and maintain equipment in laboratories
- collect information for industry (for example, regarding land use or reclamation)
- supervise junior staff.

The degree of responsibility biological technicians have in determining and defining laboratory programs and field work is directly related to their education and experience.

Working Conditions

Working environments vary considerably in this occupation. Biological technicians may work primarily indoors in laboratories and offices or outdoors in all weather conditions. Some work in both indoor and outdoor environments. Those who work outdoors may be required to travel to remote locations or operate transport equipment such as boats, quads or four wheel trucks with standard transmissions. Lifting requirements generally range up to 10 kilograms but some types of work are more physically demanding. Biological technicians who conduct microbial tests and laboratory analyses must take safety precautions to avoid exposure to infectious bacteria and viruses. Those who work in the field may be exposed to fungi, viruses or other biological agents

Hours of work also vary. Long hours may be required including evening or weekend work. Some jobs are seasonal.

Personal Characteristics

Biological technicians need the following characteristics:

- good communication skills
- good health and physical stamina
- the ability to keep detailed, accurate records
- the finger dexterity required to adjust microscopes and other fine instruments
- the ability to work independently and in a team environment.

They should enjoy having clear guidelines and organized methods for their work, working with laboratory apparatus at tasks requiring precision, and gathering data in the field.

Educational Requirements

Most employers require biological technicians to have **related post-secondary education:** a two year diploma related to biological sciences or an equivalent number of university courses. Employers also may require applicants to have:

- first aid training
- WHMIS (Workplace Hazards and Materials Information System) training
- TDG (Transportation of Dangerous Goods) training
- a valid driver's license (preferably with no demerits)
- no criminal record record.

Colleges and technical institutes throughout Alberta offer two year diploma programs in biological/environmental sciences/technology. Entrance requirements vary from one program to another but generally include a high school diploma or equivalent (or mature student status) with an average of at least 60 per cent in English Language Arts 30-1 or English 30, Biology 20 or 30, Chemistry 20 or 30 and a Grade 11 or 12 math course.

Universities and university colleges offer degree programs in biology and related sciences. Entrance requirements vary but generally include a high school diploma with an average of at least 65 per cent (up to 80 per cent for admission to some programs) in English Language Arts 30-1 or English 30, Math 30 or Pure Math 30, Biology 30, Chemistry 30 and one other appropriate Grade 12 subject (Physics 30 is required for admission to some programs). Athabasca University offers distance education programs and has an open admissions policy.

For current information about programs and mature student admission policies, please check post-secondary calendars or websites.

Other Requirements

Certification is voluntary. The Alberta Society of Engineering Technologists (ASET) offers certification for graduates of recognized education programs who have two years of successful experience in industry.

Employment and Advancement

(section revised JANUARY 2006)

Biological technicians may be employed by:

- food processing and manufacturing companies
- pharmaceutical companies
- oil and chemical companies
- agricultural firms
- research and development facilities
- biological and environmental consulting firms
- federal and provincial government departments dealing with parks, fish and wildlife, agriculture and public lands
- forensic laboratories.

Competition for positions is keen. Many new entrants into this occupation work in seasonal or part-time jobs before they obtain permanent positions.

Advancement opportunities for biological technicians are limited. Master's and doctoral degrees are required for most research and management positions.

Biological technicians are part of the larger National Occupational Classification 2221: Biological Technologists and Technicians. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Professional and Technical Services**
- **Public Administration**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- time of year (for seasonal jobs)
- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 950 Albertans are employed in the Biological Technologists and Technicians occupational group which is expected to grow 1.3 to 2.3 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 10 to 30 **new** positions will be created each year **in addition** to job openings created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Salaries for biological technicians vary greatly depending on their education and experience, and where they work.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Biological Technologists and Technicians occupational group working part-time or full-time earned from **$19,200 to $83,000 a year.** The average salary was **$43,200 a year.**

Other Sources of Information

EDinfo website: www.alis.gov.ab.ca

Alberta Society of Engineering Technologists website: www.aset.ab.ca

Canadian Council for Human Resources in the Environment Industry website: www.cchrei.ca

Canadian Environmental Certification Approvals Board website: www.cecab.org

Environmental Services Association of Alberta website: www.esaa.org

Related Occupational Profiles

Food Science Technologist
Forensic Laboratory Analyst
Forest Technician
Hazardous Waste Management Technologist
Hydrometric Technician/Technologist
Medical Laboratory Technologist
Pollution Control Technologist

Related High School Subjects

Agriculture; Community Health; Forestry; Language Arts; Mathematics; Physical Education; Science (Biology; Chemistry; and Physics); and Wildlife

Related Post-Secondary Fields of Study

Engineering and Science Technologies; and Sciences

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Biologist

Produced JANUARY 2005

Biologists conduct research to learn more about living organisms and ecosystems, manage natural resources, and develop new practices and products in such diverse fields as environmental conservation, forensics and pest control.

NOC Number(s): 2121.1
Minimum Education: 4 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: I O D

Duties

Some biologists work primarily in the field, organizing and participating in field inventories or surveys, documenting species for various types of studies and collecting specimens for museums, environmental impact assessments, reclamation or other purposes. Other biologists conduct laboratory research. However, in general, biologists:

- inventory organisms (e.g. plants, animals or communities)
- organize and implement field studies to analyze and monitor such things as population dynamics, genetics or habitat
- take samples and conduct tests in laboratories
- analyze and interpret data, and write scientific papers
- use statistics and mathematical models for applications such as estimating the number and kinds of organisms in a specific place
- assess harvest rates and sustainable yield for harvested fish and wildlife species
- consult with stakeholders and the public at large to explore resource management options
- make recommendations regarding the sustainable development of resources
- recommend operating conditions for industrial activities to negate or minimize environmental damage
- provide information and make presentations to schools, clubs and interest groups
- supervise the work of biological technicians and other staff.

Biologists may have a wide variety of job titles depending on their area of specialization. For example, aquatic biologists may be called fisheries biologists, invertebrate biologists, limnologists or marine biologists depending on the types of organisms (e.g. fish, plankton) and habitats (ocean or freshwater environments) they study.

There are many specializations in each of the following broad areas of study.

Botanists study plants and plant systems (e.g. plant growth, development, function, distribution, origin) and related environmental issues (e.g. conservation, re-vegetation, weed control). For example, they may be involved in:

- the study of plant species and the design of reserves and recovery plans for threatened species
- plant identification and inventory
- the development of biological control strategies to combat pest insects and weeds
- the reclamation of old mining land to stabilize the surface and facilitate the recovery of natural vegetation
- the study of the effects of pollutants discharged into the air by factories or vehicles on natural vegetation
- the study of how habitats change after a disturbance such as a fire (ecological succession)
- the study of plant specimens in greenhouses and laboratories
- evolutionary or taxonomic studies
- the study of prehistoric plant fossils.

Fisheries biologists study freshwater fish and their habitats. For example, they may:

- study the relationship between water quality and the health of a fishery
- identify fish, aquatic plants and insects (fish food)
- develop and evaluate fish management programs
- manage fish hatcheries.

Marine biologists study bacteria, plankton, plants and animals that live in oceans and seas and on their shorelines. For example, they may:

- study and develop models to predict the behaviour, distribution, evolution or relationships of organisms that live in marine environments (e.g. cod stocks)
- study the effects of light, temperature, physiology and nutrients on the growth of plants and animals in the sea
- study the effects of pollution on plant and animal life in oceans (water chemistry)
- develop new food sources and other useful products from the sea.

Wildlife biologists study wildlife (birds, reptiles, mammals, amphibians), wildlife habitat and environmental interactions (e.g. the effects of fire), and apply their knowledge to the management of wildlife resources and natural habitats.

For information about other areas of study, see the Ecologist, Entomologist, Food Scientist, Geneticist, Microbiologist, Pharmacologist and Toxicologist occupational profiles.

Working Conditions

Biologists' working environments range from offices and laboratories to research ships and remote, rugged terrain. Some work primarily outdoors collecting and identifying specimens, taking samples, and surveying and documenting populations. Others work primarily indoors in offices, classrooms and laboratories.

Depending on their specialty, biologists may be away from home for weeks at a time, working outdoors in all kinds of weather conditions, or they may spend considerable amounts of time working with computers in offices or equipment in laboratories.

Physical requirements also vary considerably in this occupation. Office and laboratory work may require no significant lifting but field work can be extremely demanding (for example, lifting a 50 kg net on a rolling ship).

Personal Characteristics

Biologists need the following characteristics:

- initiative and an open-minded approach to interpreting data
- an interest in nature and an appreciation for all forms of life
- an interest in mathematics and statistics
- good observation skills
- the stamina and endurance required for field work
- problem solving skills, especially in remote field situations
- good oral and written communication skills
- the ability to work well independently and in a team environment.

They should enjoy:

- synthesizing information and finding innovative solutions to problems
- working with equipment and instruments at tasks that require precision
- co-ordinating and supervising the work of others
- working with other scientists.

Educational Requirements

A four year Bachelor of Science degree in a biological or environmental science is the minimum requirement for entry to this field. A Master of Science degree is generally required for work as a field biologist, administrator, environmental consultant, professional biologist in industry or advisor with an international assistance agency. A doctoral (PhD) degree and experience as a post-doctoral fellow are required to work as a researcher or university professor.

In Alberta, the **University of Alberta** in Edmonton, the **University of Calgary** and the **University of Lethbridge** offer master's and doctoral programs in biological sciences. Admission to a master's degree program requires a specified grade point average in the last two years of a four year bachelor's degree program, or equivalent.

The following post-secondary institutions offer four year bachelor's degree programs in biological and environmental sciences:

- **Canadian University College** in Lacombe
- **Concordia University College of Alberta** in Edmonton
- **The King's University College** in Edmonton
- **University of Alberta** in Edmonton and Camrose

- **University of Calgary**
- **University of Lethbridge**.

Entrance requirements for bachelor's degree programs vary but generally include a high school diploma with an average of at least 60 per cent (70 per cent or higher for some programs) in English 30, Pure Math 30 or equivalent, Biology 30, Chemistry 30 and one other approved 30-level subject (preferably Math 31 or Physics 30).

Students interested in a particular specialty are advised to consult a faculty advisor before selecting undergraduate courses.

Post-secondary institutions throughout the province offer university transfer programs that allow students to apply two years of study toward university bachelor's degree programs. It is the student's responsibility to ensure that the courses they choose to take will be accepted for credit at the institution to which they wish to transfer.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Other Requirements

(section revised JULY 2005)

Professional Biologist is a protected title under Alberta's Professional and Occupational Associations Registration Act. This means that to call yourself a Professional Biologist, you must be a registered member of the Alberta Society of Professional Biologists (ASPB). You do **not** have to be registered with ASPB if you do not call yourself a Professional Biologist.

Employment and Advancement

(section revised JANUARY 2006)

Biologists are employed by:

- chemical companies
- environmental and engineering consulting companies
- health and educational institutions
- federal, provincial and local government departments and agencies
- pharmaceutical and biotechnical companies
- resource (e.g. coal, oil and gas) and utility industries.

Competition for positions is often keen. Related summer, part-time or volunteer work experience is a valuable asset when seeking permanent employment. A master's or doctoral degree is required for research and academic positions.

In Alberta, over 75 per cent of Biologists and Related Scientists work in the following industries:

- **Professional and Technical Services**
- **Public Administration**
- **Health Care and Social Assistance**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- time of year (for seasonal jobs)
- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

About 1,100 Albertans are employed in the Biologists and Related Scientists occupational group which is expected to grow 1.3 to 2.3 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 10 to 30 **new** positions will be created each year **in addition** to job openings created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised SEPTEMBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Biologists occupational group working part-time or full-time earned from **$29,400 to $103,200 a year.** The average salary was **$64,800 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Society of Professional Biologists website: www.aspb.ab.ca

Canadian Council for Human Resources in the Environment Industry (CCHREI) website: www.cchrei.ca

Oceanlink website: oceanlink.island.net

Related Occupational Profiles

Agrologist
Biochemist
Biotechnologist
Conservation Officer
Ecologist
Entomologist
Environmental Auditor
Environmental Education Specialist
Fish and Wildlife Officer
Food Scientist
Forensic Laboratory Analyst
Geneticist
Hazardous Waste Management Technologist
Hydrologist
Hydrometric Technician/Technologist
Interpretive Naturalist
Microbiologist
Park Warden
Pharmacologist
Physiologist
Pollution Control Technologist
Toxicologist

Related High School Subjects

Language Arts; Mathematics; Physical Education; Science (Biology; Chemistry; and Physics); Social Studies; and Wildlife

Related Post-Secondary Fields of Study

Environment, Forestry and Related Studies; and Sciences

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Biomedical Engineering Technologist

Produced JUNE 2004

Biomedical engineering technologists maintain and repair the biomedical equipment that physicians, nurses and other medical personnel use to monitor, diagnose and treat medical conditions.

NOC Number(s): 2241.1
Minimum Education: 2 years post-secondary education/training
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: **O I M**

Duties

Biomedical engineering technologists inspect, maintain, repair and sometimes install a wide variety of biomedical equipment such as:

- heart-lung machines
- kidney dialysis machines
- physiological monitors
- laboratory equipment
- venitlators
- sterilizers
- defibrillators
- infusion devices
- patient-care monitors
- physiotherapy equipment
- diagnostic imaging equipment
- laser equipment
- laparoscopic equipment
- infant incubators
- anesthesia apparatus.

This equipment must be routinely checked and maintained to ensure the safety of patients and staff. Routine maintenance also helps to identify potential problems and save costly repairs and downtime.

When a device appears to be broken, biomedical engineering technologists first determine if the fault is a simple problem or caused by user error. For more serious and time-consuming repairs, they may take the device out of service for extensive trouble-shooting. This may involve:

- dismantling the device
- repairing or replacing components or circuit boards
- calibrating the device
- advising hospital staff and management that aging equipment needs to be replaced.

Biomedical engineering technologists may also provide advice regarding the specifications and evaluation of proposed new equipment and facility design.

When new equipment arrives or existing equipment is upgraded, biomedical engineering technologists may:

- install the new equipment or parts, or check to ensure that work performed by others has been done properly
- modify equipment to meet unique operational or research needs
- teach hospital staff and researchers how to operate equipment.

Much of a biomedical engineering technologist's work involves discussing equipment requirements and the operation of equipment with physicians, administrators, engineers and other professionals.

To keep up with technological advancements, biomedical engineering technologists must spend a considerable amount of time studying technical manuals and attending training sessions provided by equipment manufacturers.

Working Conditions

Biomedical engineering technologists who work in health care facilities may be required to work rotating shifts including weekends and holidays, or to be on call for emergencies. They may be exposed to diseases and must wear protective clothing including rubber gloves and masks in some environments. Working in emergency situations can be stressful.

Biomedical engineering technologists employed by equipment manufacturers or service companies may be required to do a considerable amount of travelling.

Lifting up to 25 kilograms is required.

Personal Characteristics

Biomedical engineering technologists need the following characteristics:

- good communication skills
- the ability to remain patient and tactful with people who may be upset
- the ability to work well under pressure
- the ability to be very precise and accurate.

They should enjoy:

- working in a health care environment
- using standard and specialized equipment to test the performance of components, assemblies and systems
- analyzing and diagnosing problems
- installing or supervising the installation of equipment and systems.

Educational Requirements

The minimum education requirement for biomedical engineering technologists is a **two year diploma in a related technology**.

In Alberta, the **Northern Alberta Institute of Technology (NAIT)** in Edmonton offers a two year Biomedical Engineering Technology diploma program. The entrance requirement is a high school diploma or equivalent with English 30 or 33, Pure Math 30 (or at least 60 per cent in Applied Math 30) and one of Science 30, Physics 30 or Chemistry 30. An interest in applied sciences (especially physics) is a definite asset.

For information about other post-secondary programs related to electrical and electronics technology, see the Electrical Engineering Technologist and Electronics Engineering Technologist occupational profiles.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Other Requirements

(section revised OCTOBER 2004)

Certification with the Alberta Society of Engineering Technologists (ASET) is voluntary.

Under Alberta's Engineering, Geological and Geophysical Professions Act, Registered Professional Technologists - Engineering must be ASET members to engage in a defined scope of engineering practice as registered by the Association of Professional Engineers, Geologists and Geophysicists of Alberta (APEGGA).

Employment and Advancement

(section revised JANUARY 2006)

Biomedical engineering technologists are employed by:

- regional health authorities
- health care research facilities
- biomedical equipment manufacturers
- third party maintenance companies (contractors).

Public sector employees are unionized under the **Health Sciences Association of Alberta**.

Experienced biomedical engineering technologists may advance to supervisory positions or move into related positions in their employing organizations. Additional education is required to become a biomedical or clinical engineer.

Biomedical engineering technologists are part of the much larger National Occupational Classification 2241: Electrical and Electronics Engineering Technologists and Technicians. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Professional and Technical Services**
- **Information, Culture and Recreation**
- **Other Manufacturing**
- **Oil and Gas Extraction**
- **Public Administration**
- **Educational Services**
- **Management, Administrative and Other Support Services**
- **Construction**

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 6,500 Albertans are employed in the Electrical and Electronics Engineering Technologists and Technicians occupational group which is expected to grow 2.4 to 3.4 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 150 to 230 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since biomedical engineering technologists form only a small part of the larger occupational group on which this forecast is based, only a small portion of the new positions created will be for biomedical engineering technologists.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Electrical and Electronics Engineering Technologists occupational group working part-time or full-time earned from **$22,100 to $126,100 a year.** The average salary was **$74,400 a year.**

For more detailed information, see ASET's Annual Salary Surveys.

For information about current collective agreements in the public and not-for-profit sectors, see the Health Sciences Association of Alberta (HSAA) website.

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Society of Engineering Technologists (ASET) website: www.aset.ab.ca

Health Sciences Association of Alberta (HSAA) website: www.hsaa.ca

Related Occupational Profiles

Automated Systems Technologist
Canadian Forces Personnel - Non Commissioned
Electrical Engineering Technologist
Electronics Engineering Technologist
Mechanical Engineering Technologist

Related High School Subjects

Communication Technology; Design Studies; Electro-Technologies; Information Processing; Language Arts; Mathematics; and Science (Chemistry; and Physics)

Related Post-Secondary Fields of Study

Engineering and Science Technologies

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Biotechnologist

Produced SEPTEMBER 2005

Biotechnologists apply their knowledge of biochemistry, microbiology and molecular genetics to improve industrial processes and develop new processes in the agricultural, chemical and health care product industries (for example, in the production of drugs, antibiotics or vaccines).

NOC Number(s): 2121.2
Minimum Education: 4 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **I O D**

Duties

There are a number of developing specialties in the field of biotechnology including the following:

- **biochemical engineering** - the development of scale-up processes (for example, for fermentation) to produce larger quantities of a substance at one time
- **biochemical production** - the production of chemicals, hormones and other substances in high volumes
- **down-stream processing** - the separation and purification of chemicals and biological products produced by organisms
- **forensic sciences** - the use of deoxyribonucleic acid (DNA) for identification purposes (for example, in criminal cases, paternity suits, mass disasters)
- **genetic engineering** - the transfer of genes from one species to another (in particular, the application of recombinant DNA in producing new substances) or the improvement of genetic properties of plants and animals
- **human cell culture** - the production of antibodies and other useful biological substances
- **industrial microbiology** - the selection and improvement of genetic characteristics for the production of chemical products
- **plant cell culture** - the production of hormones or chemicals by plant cells and the modification of plant cells to improve plants (including plant genetic engineering)

Biotechnologists have made many discoveries that have led to new food sources, improved human health, new pesticides and farm animals that grow twice as big, twice as fast.

Working Conditions

Biotechnologists work in offices and laboratories, and often work evenings and weekends to complete laboratory experiments and other types of research. They must observe safety precautions to prevent injury when working with hazardous laboratory materials.

Personal Characteristics

Biotechnologists need the following characteristics:

- curiosity and imagination
- persistence and a willingness to work long hours
- a willingness to do the reading required to keep up with new developments and discoveries.

They should enjoy synthesizing information and finding innovative solutions to problems, working with equipment and instruments at tasks that require precision, and co-ordinating and supervising the work of others.

Educational Requirements

There is **more than one education route** to becoming a biotechnologist because biotechnology involves the use of principles from many disciplines. Generally, a bachelor of science degree in genetics, microbiology or biochemistry is necessary to work as a biotechnologist performing technical functions. Those considering the field of biotechnology

should consult student advisors in their Faculty to carefully map out appropriate course selections.

A master's or doctoral degree is required to work in high level technical positions. To lead research projects or teach at the post-secondary level, a PhD is usually required.

In Alberta, the following universities offer programs directly related to biotechnology.

- The **University of Alberta** in Edmonton offers B.Sc., M.Sc. and PhD degree programs in Cell Biotechnology, Genetics, Microbiology and Biochemistry.
- The **University of Calgary** offers B.Sc., M.Sc. and PhD degrees in Biochemistry, Botany, Zoology, Cellular, Molecular and Microbial Biology, and Chemical Engineering. The Faculty of Medicine offers a Bachelor of Health Sciences degree program with a specialization in Biomedical Science. The Department of Biochemistry and Molecular Biology offers a Masters in Biomedical Technology program and M.Sc. and PhD programs.
- The **University of Lethbridge** offers four year B.Sc. degree and five year co-operative education programs in Biochemistry and Biological Sciences, and M.Sc. and PhD degree programs in Biomolecular Science.

In general, the entrance requirement for these bachelor's degree programs is a high school diploma or equivalent with a minimum average of 65 to 80 per cent in English 30 or English Language Arts 30-1, Math 30 or Pure Math 30, Chemistry 30, Biology 30 and one other approved 30-level subject (e.g. Physics 30 or Math 31). Specific requirements vary from one program to another.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Post-secondary institutions throughout the province offer university transfer programs that allow students to apply up to two years of study toward university bachelor's degree programs. It is the student's responsibility to ensure that the courses they choose to take will be accepted for credit at the institution to which they wish to transfer.

Employment and Advancement

(section revised JANUARY 2006)

Biotechnologists work for the following types of organizations:

- government and university research laboratories
- hospitals
- pharmaceutical companies
- agricultural product manufacturers
- food processors
- law enforcement forensic laboratories.

Biotechnologists are usually hired for particular projects based on their training and post-doctoral work. Those who have training in economics and management are well prepared for leadership roles in large laboratories and other organizations.

Biotechnologists are part of the larger National Occupational Classification 2121: Biologists and Related Scientists. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Professional and Technical Services**
- **Public Administration**
- **Health Care and Social Assistance**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

About 1,100 Albertans are employed in the Biologists and Related Scientists occupational group which is expected to grow 1.3 to 2.3 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 10 to 30 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since biotechnologists form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for biotechnologists.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

In Canada, the highest employment growth is in agricultural biotechnology.

Salary

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Biologists and Related Scientists occupational group working part-time or full-time earned from **$17,000 to $99,400 a year.** The average salary was **$64,600 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Society of Professional Biologists website: www.aspb.ab.ca

Related Occupational Profiles

Agrologist
Biochemist
Biologist
Ecologist
Food Scientist
Geneticist
Microbiologist
Pharmacologist
Physiologist
Toxicologist

Related High School Subjects

Agriculture; Language Arts; Mathematics; Science (Biology; Chemistry; and Physics); and Wildlife

Related Post-Secondary Fields of Study

Agriculture and Related Technologies; and Sciences

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Blaster

Produced MARCH 2005

Blasters break up rock and demolish structures by placing and detonating explosives.

NOC Number(s): 7372.2
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: O I D

Duties

Duties vary depending on the industry in which blasters are employed. For information about blasting-related operations in the oil and gas industry and related services, see the Seismic Workers and Wireline Field Supervisor occupational profiles.

In general, blasters employed in the mining, quarrying or construction industries:

- study requirements, plan drill patterns, determine the depth and diameter of blast holes and conduct field tests, if required, to determine the type explosive and quantity to use
- prepare detonators, fuses, detonating cords, charges and other materials, or supervise the placement of primer charges
- load explosives into blast holes by hand or by using explosives trucks
- check series of electrical wires with blasting galvonometers or blasting multimeters to ensure complete circuits
- use detonating cord, delays, shock tubes and detonators to create blasting circuits
- check blast sites to ensure safety regulations are met
- fire charges
- deal with misfires or missed holes
- check blast sites for hazards such as overhanging rock or harmful fumes
- maintain blast equipment and ensure that safety procedures for handling, storing and moving explosives are followed
- keep records of blast patterns, design, tie-in, times, weather and other relevant information such as seismographic data.

Blasters may direct drilling activities or operate air-track, rotary, down hole or other drilling machines to drill blast holes.

In the construction industry, blasters break up rock and soil, dislodge tree stumps and demolish structures such as buildings or bridges. To avoid damaging surrounding terrain or structures via ground vibration or flying debris, blasters often use a series of small, timed detonations instead of one large explosion.

In the mining industry, blasters prepare and blast large quanitities of rock to improve mine equipment efficiency. Some mining blasts break up hundreds of thousands of tonnes of rock in one blast. Such blasts often involve the preparation and use of thousands of kilograms of pre-packaged or bulk explosives.

Working Conditions

Blasters work primarily outdoors, sometimes in remote or hazardous locations. Working conditions often are noisy and dirty. Occupational risks include explosions, flying particles, falling objects and hazardous chemicals.

Lifting up to 25 kg is required.

Personal Characteristics

Blasters need the following characteristics:

- a safety-conscious attitude
- strength and physical fitness

- good hearing, eyesight and colour vision
- good hand/eye co-ordination and manual dexterity
- an interest in math and science
- the ability to visualize three-dimensional objects from two-dimensional drawings
- good communication skills.

Those employed in underground mines also must be able to work in confined spaces.

All blasters should enjoy operating machinery and performing tasks that require precision, conducting tests and analyzing information, and directing the work of others.

Educational Requirements

Blasters start in entry level positions and advance to more responsible positions as they gain experience. For example, they may start as labourers or heavy equipment operators (for more information, see the Construction Craft Labourer, Heavy Equipment Operator and Underground Miner occupational profiles). Employers may prefer to hire applicants who have a high school diploma or related experience.

Blasters may be trained on the job as blaster helpers or take related courses before moving into blasting positions. In Alberta, surface/demolition blasting courses are offered through Alberta Human Resources and Employment.

Due to the size and quantity of explosives used and the number of people potentially exposed to blasting hazards, detailed knowledge of safe work practices and related explosive manufacturers' specifications is essential for blasters in the mining industry.

Other Requirements

In non-mining industries in Alberta, any worker who handles, prepares or fires an explosive must hold a valid permit issued by Alberta Human Resources and Employment or a valid inter-provincial permit acceptable to AHRE. Blaster permits are issued for a specific blasting operation. To qualify for a blaster's permit, you must have completed an approved course, or have six months of experience under the supervision of a blaster and a recommendation from your employer.

In the mining sector, any worker who handles, prepares or fires an explosive must hold a valid surface mine balster's or underground mine blaster's certificate issued by the Director of Mines (AHRE). To qualify as a surface mine blaster or an underground mine blaster, you must:

- have at least three years of experience in a related surface or underground mining environment.
- submit written evidence that you have received adequate instruction and training under the direction of a certified mine blaster
- pass a written examination administered by the Board of Examiners - Mining
- submit a letter of recommendation from your employer.

Employment and Advancement

(section revised JANUARY 2006)

Blasters in the construction, mining and quarrying industries are employed by:

- construction companies
- surface mining companies (e.g. oil sands companies)
- underground mining companies
- rock quarries
- drilling and blasting contractors.

Employment in the non-mining sector is often seasonal. Employment in the mining sector is usually full-time, year-round.

Blaster is not an entry level position. Experienced blasters may advance to supervisory positions but, without additional education or training, further advancement is limited.

Blasters are part of the Surface Mining, Quarrying and Construction Drillers and Blasters occupational group. In Alberta, over 75 per cent of people employed in this group work in the following industries:

- **Oil and Gas Extraction**
- **Construction**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and events affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 300 Albertans are employed in the Surface Mining, Quarrying and Construction Drillers and Blasters occupational group which is expected to grow 5.5 to 6.5 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 10 to 20 **new** positions will be created each year **in addition** to job openings created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Surface Mining, Quarrying and Construction Drillers and Blasters occupational group working part-time or full-time earned from **$20,600 to $64,900 a year.** The average salary was **$31,100 a year.**

Other Sources of Information

Post-secondary institution calendar and website (see Educational Requirements above)

Alberta Human Resources and Employment website: www3.gov.ab.ca/hre

Related Occupational Profiles

Surface Mining Equipment Operator
Underground Miner
Water Well Driller
Well Service Equipment Operator

Related High School Subjects

Construction Technologies; Electro-Technologies; Energy and Mines; Language Arts; Mathematics; Physical Education; and Science (Physics)

Related Post-Secondary Fields of Study

Trades, Industrial and Related Training

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Boilermaker

Produced FEBRUARY 2006

Boilermakers build, erect, repair, test and maintain all types of boilers, tanks and pressure vessels, and perform all types of structural and plate work on dust, air, gas, steam, oil, water and other liquid-tight pressure containers.

NOC Number(s): 7262
Minimum Education: Apprenticeship Trade - Grade 11
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: O M I

Duties

Boilermakers who fabricate and repair boilers, tanks, heat exchangers, fired heaters, reactors and other pressure vessels:

- develop a layout and plan the sequence of work to be done
- lay out plate, sheet steel or other heavy metal and locate and mark bending and cutting lines
- shape the metal using metalworking machines such as shears and drill presses
- cut metal plate and brackets using an oxy-fuel torch and chip and grind parts to shape for fitting together
- fit and tack weld parts together using electric arc welding equipment.

Boilermakers also erect and install boilers, sometime working on scaffolds, and repair and maintain existing boilers and related metal products.

Working Conditions

Boilermakers generally work on construction sites where conditions are often cramped, dirty and involve exposure to chemical vapours, wetness or high noise levels. Traveling may also be considered a necessary part of the job. The normal work week is 40 hours but some overtime may be required. There is always some risk of injury when working with heavy equipment especially at considerable heights.

Boilermakers may be required to lift items weighing over 25 kilograms.

Personal Characteristics

Boilermakers need the following characteristics:

- physical strength and stamina
- good co-ordination and manual dexterity
- good mechanical aptitude
- the ability to work in noisy, dirty and cramped conditions
- the ability to work in high places
- the ability to tolerate chemical odours.

They should enjoy working with tools, equipment and machinery. They should also enjoy doing precision work that involves a degree of excitement and variety.

Educational Requirements

To work in Alberta, boilermakers must be registered apprentices or certified journeymen.

To **register** with **Alberta Apprenticeship and Industry Training**, apprentices must:

- have at least an Alberta Grade 11 education with Math 20 or 23 or Pure Math 20 or Applied Math 20 (or equivalent) or pass an entrance exam
- find a suitable employer who is willing to hire and train an apprentice. Most employers prefer to hire high school graduates and may select apprentices from among their current employees. Good marks in math, physics, drafting and industrial arts are particularly important.

The **term of apprenticeship** is three years (three 12-month periods) that include a minimum of 1,500 hours of on-the-job training each year. There are two six-week blocks of technical training in the first year and one six-week block in the second and third. High school students can become apprentices and gain credits toward apprenticeship training and a high school diploma at the same time through the Registered Apprenticeship Program (RAP).

Applicants who have related training or work experience may be eligible for credit or certification.

Boilermaker apprentices may attempt the Interprovincial Exam in the final period of their apprenticeship training and, if successful, are granted a Red Seal (which is recognized in most parts of Canada).

Technical training is arranged by Alberta Apprenticeship and Industry Training and is currently offered at the Northern Alberta Institute of Technology (NAIT) in Edmonton.

Pre-employment programs for prospective apprentices and continuing education programs for journeymen may be offered on an as needed basis by the institution(s) listed above or other schools.

Employment and Advancement

Boilermakers are employed in the following industries:

- metal fabricating
- construction (pulp mills, mine mills, generating and oil and gas plants)
- shipbuilding
- rail transport
- petrochemical and coal products
- electric power
- iron and steel
- oil and gas.

Boilermakers may advance to supervisory positions such as foreman or superintendent. Alberta certified journeyman boilermakers who have the supervisory or management skills required by industry may apply for an Achievement in Business Competencies Blue Seal by contacting Alberta Apprenticeship and Industry Training.

In Alberta, over 75 per cent of people employed as boilermakers work in the following industries:

- **Construction**
- **Oil and Gas Extraction**
- **Metals, Metal Fabrication and Machinery Manufacturing**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- time of year (for seasonal jobs)
- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 650 Albertans are employed in the Boilermakers occupational group which is expected to grow 2.2 to 3.2 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 10 to 30 **new** positions will be created each year **in addition** to job openings created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Apprentice boilermakers earn at least 60 per cent of the journeyman wage rate in their place of employment in the first year, 75 per cent in the second and 90 per cent in the third. According to the Alberta Provincial Apprenticeship Committee for this trade, journeyman wage rates vary, but generally range from **$23 to $31 an hour plus benefits** (2005 estimate).

According to the **2005 Alberta Wage and Salary Survey**, Albertans working part-time or full-time in the Boilermakers occupational group earned **up to $79,300 a year.** The average salary was **$55,200 a year**.

Other Sources of Information

Alberta Apprenticeship and Industry Training website: www.tradesecrets.org

Alberta Construction Industry "Trade Up!" website: www.careersconstruction.com

Boilermaker.ca website: www.boilermaker.ca

Calgary Construction Association website: www.cca.cc

Construction Sector Council website: www.csc-ca.org

International Brotherhood of Boilermakers, Iron Shipbuilders, Blacksmiths, Forgers and Helpers website: www.boilermakers.ab.ca

Related Occupational Profiles

Ironworker
Sheet Metal Worker
Structural Steel and Plate Fitter
Welder

Related High School Subjects

Fabrication Studies; Mathematics; and Physical Education

Related Post-Secondary Fields of Study

Trades, Industrial and Related Training

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Bricklayer

Apprenticeship and Industry Training

Produced FEBRUARY 2006

Bricklayers construct and repair structures such as walls, partitions, patios, arches, fireplaces and chimneys by preparing and laying brick and other masonary units.

NOC Number(s): 7281
Minimum Education: Apprenticeship Trade - Grade 9
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **O M I**

Duties

Bricklayers work with masonry materials such as brick, concrete blocks, granite stones, structural tile and precast panels. They also lay or install fire brick or castable materials in commercial and industrial furnaces and incinerators, and acid tile and acid brick in pulp mills.

Duties vary from one position to another but, in general, bricklayers:

- interpret drawings and blueprints, and calculate the materials required
- measure using a plumb line and mason's level to ensure each layer is level
- spread mortar on each brick and lay them into position
- remove excess mortar around the brick
- use a hammer and chisel or a masonry saw to cut bricks to fit.

Working Conditions

Bricklayers usually work outdoors, often on scaffolding. They sometimes use protective enclosures and portable heaters in adverse weather conditions. The work is physically demanding and some travel may be required to get to various work sites. Bricklayers work a five-day, 40-hour week with overtime sometimes required to meet construction schedules.

Bricklayers routinely lift items weighing up to 25 kilograms.

Personal Characteristics

Bricklayers need the following characteristics:

- physical strength and stamina
- manual dexterity and good sense of balance
- the ability to get along well with co-workers
- an eye for colour, line and proportion.

They should enjoy working with their hands and have a sense of creativity.

Educational Requirements

Bricklayers must know the properties of various mortars and other bonding materials and how to handle different types of masonry units.

To work in Alberta, bricklayers must be ONE of the following:

- registered apprentices
- certified journeymen
- working for an employer who is satisfied that they have the skills and knowledge expected of certified journeymen
- self-employed.

To **register** with **Alberta Apprenticeship and Industry Training**, apprentices must:

- have at least an Alberta Grade 9 education (or equivalent) or pass an entrance exam
- find a suitable employer who is willing to hire and train an apprentice. Most employers prefer to hire high school graduates and may select apprentices from among their current employees. Courses in math and science are particularly important.

The **term of apprenticeship** is three years (three 12-month periods) that include a minimum of 1,600 hours of on-the-job training and eight weeks of technical training each year. High school students can become apprentices and gain credits toward apprenticeship training and a high school diploma at the same time through the Registered Apprenticeship Program (RAP).

Applicants who have related training or work experience may be eligible for credit or certification.

Bricklayer apprentices may attempt the Interprovincial Exam in the final period of their apprenticeship training and, if successful, are granted a Red Seal (which is recognized in most parts of Canada).

Technical training is arranged by Alberta Apprenticeship and Industry Training and is currently offered at at the Southern Alberta Institute of Technology (SAIT) in Calgary and by mobile delivery in Edmonton.

Pre-employment programs for prospective apprentices and continuing education programs for journeymen may be offered on an as needed basis by the institution(s) listed above or other schools.

Employment and Advancement

Bricklayers are employed by special trade, building and general contractors. Some bricklayers are self-employed, usually contracting on small jobs such as patios and fireplaces.

Many bricklayers stay in the trade until they retire. Others advance to estimator, inspector or foreman positions. Alberta certified journeyman bricklayers who have the supervisory or management skills required by industry may apply for an Achievement in Business Competencies Blue Seal by contacting Alberta Apprenticeship and Industry Training.

In Alberta, most people employed as bricklayers work in the **Construction** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- time of year (for seasonal jobs)
- trends and **events** affecting overall employment (especially in the Construction industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 1,200 Albertans are employed in the Bricklayers occupational group which is expected to grow 1.5 to 2.5 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 10 to 30 **new** positions will be created each year **in addition** to job openings created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Apprentice bricklayers earn at least 60 per cent of the journeyman wage rate in their place of employment in the first year, 80 per cent in the second year and 90 per cent in the third. According to the Alberta Provincial Apprenticeship Committee for this trade, journeyman wage rates vary, but generally range from **$24 to $30 an hour plus benefits** (2004 estimate).

According to the **2005 Alberta Wage and Salary Survey**, part-time or full-time starting salaries for Albertans working in the Bricklayers occupational group ranged from **$41,600 to $79,900 a year.** The average salary was **$64,800 a year**.

Other Sources of Information

Alberta Apprenticeship and Industry Training website: www.tradesecrets.org

Alberta Construction Industry "Trade Up!" website: www.careersconstruction.com

Calgary Construction Association website: www.cca.cc

Construction Sector Council website: www.csc-ca.org

Masonry Contractors Association of Alberta-Northern Region website: www.mca-canada.com

Related Occupational Profiles

Concrete Finisher
Construction Craft Labourer
Lather-Interior Systems Mechanic
Plasterer
Tilesetter

Related High School Subjects

Construction Technologies; and Physical Education

Related Post-Secondary Fields of Study

Trades, Industrial and Related Training

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Broadcast Maintenance Technologist

Produced JULY 2004

Broadcast maintenance technologists install, test, inspect, modify, repair and maintain radio and television broadcasting systems.

NOC Number(s): 5224
Minimum Education: 2 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **O M i**

Duties

All audio, video and other technical equipment in studios and at remote locations or transmitter facilities must be regularly tested, adjusted, cleaned and inspected. When a problem is detected, broadcast maintenance technologists repair and restore equipment to proper operating condition.

Broadcast maintenance technologists maintain and repair a wide variety of equipment, including:

- television cameras
- video switching and mixing equipment
- audio mixers
- video and audio recorders and servers
- video and audio effects equipment
- editing equipment
- microphones and sound equipment
- lighting equipment
- microwave equipment
- computer and networking equipment
- remote broadcast equipment
- transmitters and transmission equipment
- analogue and digital equipment and converters.

In general, broadcast maintenance technologists:

- construct, assemble, wire and install items such as control panels, chassis, cabinets and related equipment
- build or modify special broadcast equipment
- design and document systems using AutoCAD and cable database management systems
- ensure that the power levels and frequency of the station's broadcast signal meet government regulatory requirements and that broadcast signals are consistently clear and reliable
- set up equipment at remote locations.

Depending on the size of the broadcast company, maintenance technologists may:

- divide their time between repairing and maintaining equipment at the station and visiting the transmitter(s)
- work exclusively at the station or mobile trailers or at transmitter and rebroadcast facilities.

Working Conditions

Maintenance technologists generally work indoors. They frequently work with small hand tools and electronic test equipment. Some heavy lifting may be required.

Broadcast maintenance technologists usually work shifts, including evenings, weekends and holidays. They may be required to remain on stand-by during their time off in case emergency repairs are needed at the station or at transmitter facilities. Overtime may be required to meet broadcast deadlines.

Technologists who work for broadcast companies that have a large number of rebroadcasting facilities may be required to travel extensively to visit these facilities.

Personal Characteristics

Broadcast maintenance technologists need the following characteristics:

- an aptitude for electrical and mechanical work
- a keen interest in electronics and computers
- the ability to perform precise, co-ordinated hand movements
- good analytical and technical problem-solving skills
- patience and persistence
- excellent communication and interpersonal skills
- good hearing.

They should enjoy setting up and operating equipment, and trouble-shooting technical problems.

Educational Requirements

Broadcast maintenance technologists need at least **two years of post-secondary training in broadcast electronics**.

In Alberta, the **Southern Alberta Institute of Technology (SAIT)** in Calgary offers a Broadcast Technology diploma program. The admission requirement is a high school diploma with English 30 and Pure Math 30 or equivalent and a 20-level science course, or successful completion of the Pre-Careers program at SAIT.

After they are hired, inexperienced broadcast maintenance technologists receive further on-the-job training.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Other Requirements

Certification is voluntary. The Society of Broadcast Engineers (SBE) and Alberta Society of Engineering Technologists (ASET) offer certification for graduates of recognized education programs.

Employment and Advancement

(section revised JANUARY 2006)

Broadcast maintenance technologists work for:

- radio and television broadcasting networks and stations
- recording studios
- production facilities
- multi-media enterprises
- entertainment venues
- broadcast equipment companies (in sales and technical support positions).

In some cases, broadcast maintenance technologists are hired on a contract basis.

Experienced broadcast maintenance technologists may advance to supervisory positions such as senior technologist or chief engineer.

Broadcast maintenance technologists are part of the larger National Occupational Classification 5224: Broadcast Technicians. In Alberta, most people employed in this classification work in the **Information, Culture and Recreation** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Information, Culture and Recreation industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 450 Albertans are employed in the Broadcast Technicians occupational group which is expected to grow 1.4 to 2.4 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover. (**Note**: Since broadcast maintenance technologists form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for broadcast maintenance technologists.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Employment growth is best for broadcast maintenance technologists who are willing to relocate.

Salary

(section revised OCTOBER 2005)

Salaries for broadcast maintenance technologists vary depending on the technologist's experience and training, and the size of the broadcast company.

According to the **2005 Alberta Wage and Salary Survey**, part-time or full-time starting salaries for Albertans working in the Broadcast Technicians occupational group ranged from **$17,200 to $36,600 a year.** The average salary was **$49,300 a year**.

For more detailed information, see ASET's Annual Salary Surveys.

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Society of Engineering Technologists (ASET) website: www.aset.ab.ca

Related Occupational Profiles

Electrical Engineering Technologist
Electronics Engineering Technologist
Telecommunications Engineering Technologist

Related High School Subjects

Design Studies; Electro-Technologies; Information Processing; Language Arts; Mathematics; Mechanics; and Science

Related Post-Secondary Fields of Study

Engineering and Science Technologies

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Building Operator

Produced FEBRUARY 2005

Building operators are responsible for the day-to-day maintenance and operation of large buildings that have complex heating, mechanical and electrical systems.

NOC Number(s): 6663, 7351
Minimum Education: Less than high school
Employment Outlook: Employment turnover plus below average occupational growth in Alberta
Interests: **M O I; O i m**

Duties

Building operators are responsible for overall building operation and maintenance, and for dealing with emergencies. Their duties vary depending on the type of building but, in general, they:

- routinely inspect interior and exterior spaces and equipment
- monitor the performance of heating, electrical, mechanical and security systems and trouble-shoot problems
- report problems and recommend changes to improve efficiency, reduce operating costs or comply with environmental, building and safety codes
- perform routine equipment maintenance tasks and keep maintenance records
- monitor access to restricted areas such as the roof and telecommunications equipment and ensure that they are kept safe, clean, functional and accessible
- perform or oversee housekeeping and groundskeeping duties
- respond to emergencies such as power failures, floods and fires
- organize and conduct fire drills
- respond to complaints from building tenants and act as a liaison between tenants and owners
- supervise the work of maintenance personnel and contractors hired to make repairs
- maintain an inventory of supplies and equipment, and make recommendations regarding the purchase of new equipment.

Building operators often use computers to monitor equipment performance and for administrative tasks.

Working Conditions

Building operators generally work 36 to 40 hours a week. They may be required to work shifts and be on call at specified times. Overtime may be required when equipment malfunctions.

Building operators may be required to lift items weighing over 25 kilograms.

Personal Characteristics

Building operators need the following characteristics:

- good communication and interpersonal skills
- mechanical aptitude and skills
- good problem-solving skills
- good organizational skills
- the ability to work with little supervision
- the ability to respond quickly and appropriately in emergency situations.

They should enjoy having clear rules and guidelines, operating equipment and solving problems by experimenting.

Educational Requirements

Although there is **no standard minimum education** requirement, building operators need a basic understanding of environmental health and safety legislation, and the design, operation and maintenance of building systems. Employers generally require applicants to have a Fifth Class Power Engineering certificate and may require one or more of the following:

- first aid certificate
- WHMIS (Workplace Hazards Management Information System) certificate
- Alberta Human Resources and Employment "Safety in the Workplace" certificate
- valid driver's license
- experience supervising the work of others
- journeyman certificate in one or more trades.

Power engineering courses are offered by many colleges and institutes of technology in Alberta (for more information, see the Power Engineer occupational profile).

Organizations such as the **Building Owners and Managers Association (BOMA)** and the **Real Estate Institute of Canada (REIC)** also may offer related training. Continuing education programs may be offered on an as needed basis.

Employment and Advancement

(section revised JANUARY 2006)

Building operators are employed by:

- federal, provincial and local governments
- school boards and post-secondary institutions
- regional health authorities
- property management and real estate companies
- hotels
- shopping malls
- factories
- other owners and operators of large buildings such as office highrises.

With additional education, experienced building operators may advance to supervisory positions such as chief engineer or operations manager.

Building operators may be classified in the National Occupational Classification 6663: Janitors, Caretakers and Building Superintendents occupational group or NOC 7351: Stationary Engineers and Auxiliary Equipment Operators.

In Alberta, over 75 per cent of people employed in the Janitors, Caretakers and Building Superintendents classification work in the following industries:

- **Management, Administrative and Other Support Services**
- **Educational Services**
- **Finance, Insurance and Real Estate**
- **Health Care and Social Assistance**
- **Accommodation and Food Services**
- **Repair, Maintenance, Personal and Other Services**.

Over 75 per cent of people employed in the Stationary Engineers and Auxiliary Equipment Operators classification work in the following industries:

- **Utilities**
- **Health Care and Social Assistance**
- **Educational Services**
- **Oil and Gas Extraction**
- **Food and Beverage Products Manufacturing**
- **Mineral Products Manufacturing**
- **Public Administration**
- **Management, Administrative and Other Support Services**.

The employment outlook in these occupational groups will be influenced by a wide variety of factors including:

- building activity and trends and events affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)

- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 22,850 Albertans are employed in the Janitors, Caretakers and Building Superintendents occupational group which is expected to grow 0.5 to 1.5 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 110 to 350 **new** positions will be created each year **in addition** to job openings created by employment turnover.

Over 1,950 Albertans are employed in the Stationary Engineers and Auxiliary Equipment Operators occupational group which is expected to grow 1.2 to 2.2 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 20 to 50 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since building operators form only a part of two larger occupational groups, only a portion of the new positions created will be for building operators.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Salaries vary considerably depending on the building operator's qualifications, the responsibilities of the position, and the location and size of the employing organization.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the:

- Janitors, Caretakers and Building Superintendents occupational group working part-time or full-time earned from **$10,800 to $70,400 a year.** The average salary was **$23,400 a year.**
- Stationary Engineers and Auxilliary Equipment Operators occupational group working part-time or full-time earned from **$21,600 to $78,400 a year.** The average salary was **$57,300 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)
EDinfo website: www.alis.gov.ab.ca/edinfo
Alberta Boilers Safety Association (ABSA) website: www.absa.ca
Building Owners and Managers Association (BOMA) website: www.bomacanada.org
Real Estate Institute of Canada (REIC) website: www.reic.ca

Related Occupational Profiles

Building Superintendent
Custodian
Power Engineer
Property Manager
Recreation Facility Operator

Related High School Subjects

Community Health; Construction Technologies; Language Arts; Mechanics; and Physical Education

Related Post-Secondary Fields of Study

Trades, Industrial and Related Training

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Building Superintendent

Produced DECEMBER 2005

Building superintendents maintain and manage commercial, institutional and residential properties.

NOC Number(s): 6663
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus below average occupational growth in Alberta
Interests: **M O I**

Duties

Building superintendents are representatives of property owners or managers (for more information, see the Property Manager occupational profile). Their responsibilities vary from one position to another but, in general, building superintendents:

- ensure a high standard of building cleanliness, inside and out
- make sure that heating, ventilation, power and other mechanical equipment operates effectively
- supervise workers and contractors in the care, cleaning and maintenance of buildings and do minor repairs themselves (for example, fix door hardware themselves)
- co-ordinate renovation projects
- act as a liaison between owners or managers and tenants
- respond to requests and complaints
- keep records
- prepare and work within budgets
- may operate equipment such as lawn mowers or front end loaders.

For information about the day-to-day maintenance and operation of large buildings that have complex heating, mechanical and electrical systems, see the Building Operator occupational profile.

Working Conditions

Building superintendents for large buildings and property management companies generally work a 40 hour week. They may be required to work shifts and be on call at specified times. Building superintendents in smaller residential complexes may work part-time and, if they live in the buildings they maintain, may be on call at specified times.

Building superintendents must be sufficiently mobile to move around building complexes quickly and easily. Their work may involve lifting items weighing up to 25 kilograms.

Personal Characteristics

Building superintendents need good communication and interpersonal skills.

They should enjoy having clear rules and guidelines, operating equipment and solving problems by experimenting.

Educational Requirements

Although there is no standard minimum education requirement, building superintendents need a basic understanding of environmental health and safety issues, and the design, operation and maintenance of building systems. Some employers require applicants to have a:

- first aid certificate
- WHMIS (Workplace Hazards Management Information System) certificate
- a Safety in the Workplace certificate from Alberta Human Resources and Employment
- journeyman certificate in one or more trades
- Fourth Class or Fifth Class Power Engineering certificate.

Power engineering courses are offered by many colleges and institutes of technology in Alberta (for more information, see the Power Engineer occupational profile).

NorQuest College in Edmonton offers a seven week, full-time Building Service Worker certificate program that includes two weeks of work experience. Applicants must be at least 18 years of age, physically fit and complete a reading test. NorQuest also offers a 20 week, full-time Building Service Supervisor program.

Organizations such as the **Building Owners and Managers Association (BOMA)**, **International Facility Management Association (IFMA)** and the **Real Estate Institute of Canada (REIC)** also may offer related training.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check institution calendars or websites.

Employment and Advancement

(section revised JANUARY 2006)

Building superintendents are employed by property management companies and owners of office buildings, factories, hospitals, hotels, apartment buildings, schools or institutions. Most building superintendents are employed in urban areas.

Building superintendents are part of the larger National Occupational Classification 6663: Janitors, Caretakers and Building Superintendents. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Management, Administrative and Other Support Services**
- **Educational Services**
- **Finance, Insurance and Real Estate**
- **Health Care and Social Assistance**
- **Accommodation and Food Services**
- **Repair, Maintenance, Personal and Other Services**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 22,850 Albertans are employed in the Janitors, Caretakers and Building Superintendents occupational group which is expected to grow 0.5 to 1.5 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 110 to 350 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since building superintendents form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for building superintendents.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Janitors, Caretakers and Building Superintendents occupational group working part-time or full-time earned from **$10,800 to $70,400 a year.** The average salary was **$23,400 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Building Owners and Managers Association (BOMA) website: www.bomacanada.org

International Facility Management Association (IFMA) website: www.ifma.org

Real Estate Institute of Canada (REIC) website: www.reic.ca

Related Occupational Profiles

Building Operator
Carpet and Upholstery Cleaner
Custodian
Executive Housekeeper
Property Manager
Room/Housekeeping Attendant

Related High School Subjects

Community Health; Construction Technologies; Electro-Technologies; Financial Management; Legal Studies; Mechanics; and Physical Education

Related Post-Secondary Fields of Study

Trades, Industrial and Related Training

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Bus Driver

Produced SEPTEMBER 2003

Bus drivers transport passengers from place to place along established routes. They may operate transit buses, motor coaches or school buses.

NOC Number(s): 7412.1
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: O M S

Duties

Bus drivers' duties and responsibilities vary depending on the type of vehicle they operate and the type of service but, in general, bus drivers:

- operate vehicles in a safe and courteous manner
- follow established routes and time schedules or drive to charter destinations
- inspect vehicles before and after trips
- submit simple reports at the end of each shift
- submit accident reports when necessary.

Transit bus drivers also issue transfers, check bus passes and collect fares, and answer questions about bus routes, schedules and specific buildings.

Motor coach drivers may drive from city to city or operate local tour buses. In addition to driving, tour bus operators may greet sightseers and provide commentary during tours and charter trips.

School bus drivers transport students to and from schools. Their routes may be along busy city streets or over rural roads.

Working Conditions

All drivers must deal with difficult passengers and the hazards associated with driving in bad weather conditions, on poor driving surfaces and/or in heavy traffic. They often work shifts including evenings, weekends and holidays.

School bus drivers work weekdays before and after school hours but may also drive students on field trips during or outside of school hours. Drivers who transport special needs students must load and unload mobility aids and lift children into seats.

Transit bus drivers often work changing shifts for several years before they get regular routes and regular shifts. Many drivers work part-time or split shifts.

Drivers employed by long distance bus lines and tour companies may be required to load and unload luggage and parcels weighing up to 45 kilograms into luggage compartments.

Personal Characteristics

Bus drivers need the following characteristics:

- good health and vision
- good communication skills
- the ability to be diplomatic and courteous in dealing with the public, from the first passenger to the last passenger each day
- the ability to remain alert and maintain a high level of concentration
- good judgement and the ability to react quickly in emergency situations.

They should enjoy driving, taking a methodical approach to recording information and inspecting vehicles, and talking to people.

Educational Requirements

There are **no standard education requirements** for bus drivers. However, individual employers may specify a minimum education requirement (e.g. Grade 11 or equivalent training and experience).

Employers prefer to hire bus drivers who have:

- good customer service skills
- experience dealing with the public
- experience driving larger vehicles
- emergency first aid certification
- a clear driving record.

In Alberta, a system of **Classified Driver Licensing** sets medical standards and licensing requirements for handling specific types vehicles. Employers may provide the training required to allow newly-hired bus drivers to upgrade their Alberta Class 5 operator's license to the required **Class 2** level. Depending on the type of bus, an air brakes endorsement may be required as well. Some bus lines require motor coach drivers to have a Class 1 license.

Many bus line and transit companies provide training programs (three to six weeks long) for new bus drivers. The training covers basic driving skills and traffic laws, bus schedule information, and customer service training.

In Alberta, Class 2 School Bus driving programs are offered by:

- some public colleges
- private vocational schools.

Program length, costs and admission requirements vary. However, applicants are generally required to be at least 18 years of age and have a valid Alberta Class 5 driver's licence. A clear driving record or minimum number of demerits and/or a medical examination may also be required.

Before enrolling in any program, prospective students should discuss their training and employment options with experienced bus drivers and potential employers.

Employment and Advancement

(section revised JANUARY 2006)

Bus drivers are employed by:

- municipal transit systems
- school bus companies
- long distance and tour bus lines
- charter bus services.

Most positions are part-time. Large transit systems may use video-based selection tools and written tests to screen job applicants.

With experience and initiative, some drivers move into positions in related areas such as dispatching, office management, safety, training or vehicle maintenance.

Bus drivers are part of the larger National Occupational Classification 7412: Bus Drivers and Subway and Other Transit Operators. In Alberta, over 75 per cent of people employed in this classification work in the **Transportation and Warehousing** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Transportation and Warehousing industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 9,800 Albertans are employed in the Bus Drivers and Subway and Other Transit Operators occupational group which is expected to grow 1.3 to 2.3 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 120 to 230 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since bus drivers form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for bus drivers.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Bus drivers' earnings vary considerably depending on location and employer. Motor coach drivers may earn hourly wages or flat fees on a contract basis for tours and special charters. Long distance drivers may be paid by the mile. School bus drivers work an average of 180 days per year and are paid on a daily or flat rate basis.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Bus Drivers and Subway and Other Transit Operators occupational group working part-time or full-time earned from **$11,300 to $24,800 a year.** The average salary was **$27,600 a year.**

Other Sources of Information

(section revised JUNE 2005)

Careers in Transportation website: www.transpocity.ca

Related Occupational Profiles

Chauffeur
Driving Instructor
Taxi Driver
Truck Driver

Related High School Subjects

Language Arts

Related Post-Secondary Fields of Study

Driver Training

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Bus Line Ticket Agent

Produced OCTOBER 2003

Bus line ticket agents provide information and sell tickets to passengers travelling by motor coach.

NOC Number(s): 6434.1
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **M S O**

Duties

Bus line ticket agents' duties and job titles vary from one employer to another but, in general, they:

- answer telephone and in-person inquiries about routes, time schedules and rates
- help customers plan travel times and routes
- make and confirm seat reservations
- calculate expenses and issue tickets
- accept payment
- direct passengers to their points of departure.

In large bus companies, the duties of reservation agents in centralized ticket offices are different from the duties of counter service agents in depots. Reservation agents answer telephone inquiries and confirm reservations. Counter service agents sell tickets at ticket counters. At small bus stops, a hotel or restaurant proprietor may perform the duties of a counter service agent.

Working Conditions

Most bus line ticket agents work shifts, including evenings, weekends and holidays. During vacation seasons and holidays, they may be required to work overtime. The work environment can be hectic and some customers can be difficult to deal with, especially when poor weather conditions cause delays.

Personal Characteristics

Bus line ticket agents need the following characteristics:

- a neat and friendly appearance
- good communication skills and speaking voice
- the ability to deal tactfully with the public.

They should enjoy copying and recording information, dealing with people and operating computer ticketing systems.

Educational Requirements

Most bus lines require ticket agents to have **a high school diploma and/or work experience in clerical, sales or related public contact positions.** Ticket agents need exceptional customer service skills, should be bondable (acceptable to an insurance company as a responsible, law-abiding citizen) and have the keyboarding skills required to operate computer terminals.

New bus line employees are **trained on the job**, first on fares and schedules, then on making up tickets.

Employment and Advancement

(section revised JANUARY 2006)

Bus line ticket agents are usually employed in or near urban centres. Large employers generally select ticket agents from among their current employees.

Bus line ticket agents may advance to supervisory positions such as customer service representative, cargo agent or reservation agent. However, competition for these positions is usually keen and there are few other advancement opportunities.

Bus line ticket agents are part of the larger National Occupational Classification 6434: Ticket Agents, Cargo Service Representatives and Related Clerks (Except Airline). In Alberta, over 75 per cent of the people employed in the classification work in the **Transportation and Warehousing** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Transportation and Warehousing industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

About 400 Albertans are employed in the Ticket Agents, Cargo Service Representatives and Related Clerks (Except Airline) occupational group which is expected to grow 1.5 to 2.5 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover. (**Note**: Since bus line ticket agents form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for bus line ticket agents.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, part-time or full-time starting salaries for Albertans working in the Ticket Agents, Cargo Service Representatives and Related Clerks (Except Airline) occupational group ranged from **$13,400 to $29,600 a year.** The average salary was **$24,300 a year**.

Related Occupational Profiles

Airline Ticket Agent
Call Centre Agent
Cashier

Related High School Subjects

Language Arts; Logistics; Mathematics; and Tourism Studies

Related Post-Secondary Fields of Study

Personal and Food Services

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Bylaw Enforcement Officer

Produced APRIL 2003

Bylaw enforcement officers are employed by municipalities to enforce local bylaws. In some cases, they may also be appointed as special constables to enforce certain provincial statutes in their municipality or county jurisdiction.

NOC Number(s): 6463.2
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **M D s**

Duties

The responsibilities of bylaw enforcement officers vary considerably from one municipality to another. In smaller jurisdictions, a bylaw enforcement officer may look after a wide range of bylaws including traffic control, animal control, business licensing and weed control. In large urban centres, bylaw enforcement officers may specialize in checking and enforcing specific bylaws.

In general, bylaw enforcement officers may:

- respond to complaints from local citizens, elected officials and businesses
- discuss the requirements of the bylaw with the people involved and attempt to reach an understanding and obtain voluntary compliance with the bylaw
- enforce bylaws by issuing orders to correct problems such as unsightly property
- correct problems when orders are not obeyed by arranging for required work to be done and invoicing the property owner
- enforce bylaws by issuing violation tickets, traffic tags or summonses and subpoenas, and prepare related legal documents
- set up and maintain a traffic fine system
- use specialized equipment related to specific bylaws (e.g. weights and measures, noise level instruments, auto samplers for taking chemical samples)
- investigate bylaw offences to prepare for court proceedings
- appear in court and give testimony related to the prosecution of a bylaw offender.

The municipalities that hire bylaw enforcement officers define the powers they may use on the job. A municipality may apply to Alberta Justice to have a bylaw enforcement officer appointed as a special constable.

Working Conditions

Bylaw enforcement officers may work shifts, including evenings and weekends. Other working conditions also vary depending on which bylaws they enforce. For example, they may have to deal with hazardous goods or aggressive animals. In some circumstances, bylaw enforcement officers are required to lift items weighing over 25 kilograms.

Personal Characteristics

Bylaw enforcement officers need the following characteristics:

- strong verbal and written communication skills
- the ability to handle potential conflict situations
- good observation, problem-solving and decision-making skills
- the ability to work with a minimum of supervision
- the ability to react quickly and with good judgement.

They should enjoy having established policies and procedures to guide their work, enforcing regulations and dealing with people.

Educational Requirements

(section revised JUNE 2005)

Many municipalities hire bylaw officers and train them on the job. Job applicants should have:

- at least a high school education
- up to two years of related experience
- a working knowledge of the provincial court system
- knowledge of proper investigative and interviewing techniques
- a valid driver's licence with a clean driving abstract
- a current Standard First Aid certificate
- computer skills for inputting and retrieving data.

Most employers prefer to hire bylaw enforcement officers who have a **related two year post-secondary diploma or degree**. In Alberta, education programs related to law enforcement are offered by the following post-secondary institutions:

- **Athabasca University** offers a four year Bachelor of Professional Arts degree program in Criminal Justice. This program is available to students who have a two year diploma in criminal justice-related areas from an accredited college or technical institute program.
- **CDI College of Business, Technology and Health Care** in Calgary and Edmonton offers a 42-week Policing and Protection Services program.
- **Columbia College**, a private vocational school in Calgary, offers Criminal Justice Certificate and Diploma programs. These programs may be taken as 25-week full-time programs or 50-week part-time programs. The entrance requirements for the Certificate program are a high school diploma with at least 60 per cent in English 30 and Math 30 or equivalent, a successful interview and a criminal record check.
- **Grant MacEwan College** in Edmonton offers a two year Police and Security diploma program with a specialization in Police Studies. The entrance requirement is a high school diploma or equivalent with at least 65 per cent in English 30 (or at least 75 per cent in English 33 or a skills assessment). A criminal record check and fitness test are required. Grant MacEwan College also offers a nine month Aboriginal Police Studies program.
- **Lethbridge Community College** offers a two year Criminal Justice Diploma. The entrance requirement is a high school diploma or equivalent. Applicants are required to take a computerized placement test, complete a questionnaire and attend an interview with a faculty member. A medical examination and eyesight/colour vision testing are recommended. Lethbridge Community College also offers a Criminal Justice certificate designed for aboriginal people.
- **Medicine Hat College** offers a two year Police and Security diploma program with a Police major. The entrance requirements are a high school diploma with at least 60 per cent in English 30 or equivalent, and completion of a Standard First Aid and CPR certificate. An interview and program orientation are required, and a physical fitness test may be required. This program is offered in partnership with Grant MacEwan College.
- **Mount Royal College** in Calgary offers a four year applied degree program in Justice Studies. The entrance requirement is a high school diploma with English 30, Pure or Applied Math 30 and Social Studies 30, or equivalent.
- **Northern Lakes College** in Grouard offers a 10 month Aboriginal and Community Policing certificate program. Applicants must be at least 19 years old and have successfully completed English 23 and Math 13 or Applied Math 10 or equivalent. A valid driver's licence, criminal record check, fitness assessment, medical exam and personal interview are also required. Graduates of this program may apply for credit toward police and security programs at Lethbridge Community College, Grant MacEwan College or Athabasca University.
- **NorQuest College** in Edmonton offers a 40-week Aboriginal Policing and Security certificate program. Applicants must be at least 19 years old and have successfully completed a Grade 10 English and Math or equivalent. A valid driver's licence, fitness assessment and medical exam are also required.
- The **University of Alberta** in Edmonton offers a four year Bachelor of Arts (BA) degree program in criminology. The entrance requirement is completion of one year of an undergraduate degree program (usually an Arts program) with a minimum grade point average of 6.0/9. This is a quota program so higher than minimum marks may be required for admission. Two letters of reference and personal suitability for employment in the criminal justice system are also required.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

(section revised JANUARY 2006)

The only employers of bylaw enforcement officers are municipal councils and city bylaw departments. Depending on the size of the municipality, bylaw officers may work alone or as part of a small group of bylaw officers. Many jurisdictions employ bylaw enforcement officers on a contract basis.

With several years of experience, bylaw officers in larger centres may advance to supervisory positions.

Bylaw enforcement officers are part of the larger National Occupational Classification 6463: By-law Enforcement and Other Regulatory Officers. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Public Administration**
- **Management, Administrative and Other Support Services**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 250 Albertans are employed in the By-law Enforcement and Other Regulatory Officers occupational group which is expected to grow up 1.5 to 2.5 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover. (**Note**: Since bylaw enforcement officers form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for bylaw enforcement officers.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the By-law Enforcement and Other Regulatory Officers occupational group working part-time or full-time earned from **$20,100 to $86,500 a year.** The average salary was **$43,500 a year.**

Other Sources of Information

(section revised APRIL 2005)

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Municipal Enforcement Association website: www.amea.ca

Related Occupational Profiles

Canadian Forces Personnel - Non Commissioned
Conservation Officer
Correctional Officer
Customs Inspector
Fish and Wildlife Officer
Park Warden
Police Officer
Private Investigator
Security Guard
Sports Official

Related High School Subjects

Community Health; Language Arts; Legal Studies; Mathematics; Physical Education; and Social Studies

Related Post-Secondary Fields of Study

Social, Community and Protective Services

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Cabinetmaker

Apprenticeship and Industry Training

Produced FEBRUARY 2006

Cabinetmakers build and repair custom or production-type fixtures and furniture made of wood or wood substitutes.

NOC Number(s): 7272
Minimum Education: Apprenticeship Trade - Grade 11
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **O M I**

Duties

Cabinetmakers who build a typical wood unit such as a kitchen cupboard:

- read specifications and drawings
- make layouts and patterns
- set up and operate woodworking equipment
- cut, shape, mould and assemble components of wood and wood substitutes
- sand wooden surfaces
- apply veneer, stain, polish or plastic laminates to finished surfaces.

Cabinetmakers who produce custom-made products:

- discuss projects with customers and draw up detailed specifications
- estimate the amount and type of material needed and the cost
- select the wood
- cut, measure and produce pieces of a project
- assemble the product by gluing, clamping, dowelling, nailing and screwing pieces together
- scrape and sand the unit and apply a finish such as paint, stain, plastic laminate, varnish or lacquer
- repair or restyle wooden furniture and fixtures
- install retail or residential cabinetry.

In large cabinet shops furnished with high-tech computer controlled equipment, cabinetmakers may specialize only in one or two of the functions listed above.

Working Conditions

Cabinetmakers work indoors, generally in a shop environment exposed to a high noise level, some airborne sawdust and chemicals from painting and stripping. There is some risk of injury when working with high-speed woodworking machinery.

Cabinetmakers may be required to lift equipment or supplies weighing over 25 kilograms.

Personal Characteristics

Cabinetmakers need the following characteristics:

- good eyesight to select woods and look for surface imperfections
- good hand-eye co-ordination and manual dexterity
- the ability to visualize a finished product from drawings, blueprints or other specifications.

They should enjoy creating things with their hands and doing precision work.

Educational Requirements

To work in Alberta, cabinetmakers must be ONE of the following:

- registered apprentices
- certified journeymen
- working for an employer who is satisfied that they have the skills and knowledge expected of certified journeymen
- self-employed.

To **register** with **Alberta Apprenticeship and Industry Training**, apprentices must:

- have at least an Alberta Grade 11 education with Math 20 or 23 or Pure Math 20 or Applied Math 20 (or equivalent) or pass an entrance exam
- find a suitable employer who is willing to hire and train an apprentice. Most employers prefer to hire high school graduates and may select apprentices from among their current employees.

The **term of apprenticeship** is four years (four 12-month periods) that include a minimum of 1,360 hours of on-the-job training and eight weeks of technical training each year. High school students can become apprentices and gain credits toward apprenticeship training and a high school diploma at the same time through the Registered Apprenticeship Program (RAP).

Apprentices are required to provide their own tools.

Applicants who have related training or work experience may be eligible for credit or certification.

Cabinetmaker apprentices may attempt the Interprovincial Exam in the final period of their apprenticeship training and, if successful, are granted a Red Seal (which is recognized in most parts of Canada).

Technical training is arranged by Alberta Apprenticeship and Industry Training and is currently offered at:

- the Northern Alberta Institute of Technology (NAIT) in Edmonton
- the Southern Alberta Institute of Technology (SAIT) in Calgary.

Outside the apprenticeship program, the **Northern Alberta Institute of Technology (NAIT)** in Edmonton offers a one year Millwork and Carpentry certificate program with a specialization in cabinetmaking. The entrance requirement is Grade 10 with English and math.

Pre-employment programs for prospective apprentices and continuing education programs for journeymen may be offered on an as needed basis by the institution(s) listed above or other schools.

For current information on programs and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

Cabinetmakers are employed in custom shops or are self-employed.

Many cabinetmakers stay in the trade until they retire. They may set up their own shops or advance to supervisory positions. Alberta certified journeyman cabinetmakers who have the supervisory or management skills required by industry may apply for an Achievement in Business Competencies Blue Seal by contacting Alberta Apprenticeship and Industry Training.

In Alberta, over 75 per cent of people employed as cabinetmakers work in the following industries:

- **Construction**
- **Other Manufacturing**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

About 1,650 Albertans are employed in the Cabinetmakers occupational group which is expected to grow 1.4 to 2.4 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 20 to 40 **new** positions will be created each year **in addition** to job openings created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Apprentice cabinetmakers earn at least 55 per cent of the journeyman wage rate in their place of employment in the first year of apprenticeship, 65 per cent in the second, 75 per cent in the third and 85 per cent in the fourth. According to the Alberta Provincial Apprenticeship Committee for this trade, journeyman wage rates vary, but generally range from **$14 to $19 an hour plus benefits** (2004 estimate).

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Cabinetmakers occupational group working part-time or full-time earned from **$19,700 to $67,700 a year.** The average salary was **$39,200 a year.**

Other Sources of Information

Alberta Apprenticeship and Industry Training website: www.tradesecrets.org

Post-secondary institution calendars or websites (see Educational Requirements above)
EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Construction Industry "Trade Up!" website: www.careersconstruction.com

Calgary Construction Association website: www.cca.cc

Construction Sector Council website: www.csc-ca.org

Related Occupational Profiles

Carpenter
Upholsterer

Related High School Subjects

Construction Technologies; Language Arts; and Mathematics

Related Post-Secondary Fields of Study

Trades, Industrial and Related Training

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Call Centre Agent

Produced NOVEMBER 2005

Call centre agents respond to questions and inquiries, resolve customer problems and provide information about company policies, products and services over the phone, by fax and via the Internet.

NOC Number(s): 1453.2
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **M S i**

Duties

Duties and responsibilities vary from one organization to another but, in general, call centre agents:

- respond to telephone calls and e-mail
- provide information about services, policies or products
- obtain and process the information required to serve customers and solve problems
- keep transaction records
- update and maintain databases of information
- arrange billing or accept credit card payments for products and services
- investigate customer complaints and arrange for refunds, exchanges or credit when appropriate.

In some organizations, call centre agents also handle inquiries from walk-in customers.

Working Conditions

Call centre agents work in an automated office environment. Depending on the employer, they may work shifts. Some call centres operate 24 hours a day, seven days a week.

Call centre agents work in a technologically measured environment in which there may be little privacy. Managers may record conversations and track how agents spend their time. Handling high numbers of calls and working in an environment of rapid technological change can be stressful.

Personal Characteristics

Call centre operators need the following characteristics:

- a pleasant telephone voice that conveys sincerity and confidence
- commitment to providing good customer service
- good written and oral communication skills
- organization and multi-tasking skills
- the ability to work independently or as part of a team
- the ability to remain interested and focused when repeating information
- the ability to think quickly and respond to complaints smoothly and tactfully.

They should enjoy taking a methodical approach to their work, talking to people and providing information.

Educational Requirements

There is no standard education requirement for call centre agents but most employers prefer to hire applicants who have a high school diploma or some post-secondary education. Sales experience and strong computer and keyboarding skills are definite assets. Some employers require job applicants to have qualifications related to their industry. For example, banks may require applicants to have a background in the finance industry; retailers may require post-secondary education related to the types of products they sell.

Call centre agents are usually **trained on the job**. They need to learn about the employer and its products, services and policies so they can talk about them confidently and answer questions correctly.

The **Academy of Learning**, a private vocational school in Calgary, Edmonton, High River and Red Deer, offers a 825 hour (35 week) Customer Service/Call Centre Operator program. The entrance requirement is a high school diploma or equivalent, or mature student admission.

Continuing education programs are often offered on an as needed basis.

Employment and Advancement

(section revised JANUARY 2006)

Call centre agents are employed by:

- insurance companies
- telephone companies
- power, water and gas utility companies and contractors
- retail establishments
- wholesale establishments such as mail-order and Internet-based companies
- educational institutions
- other organizations with a strong customer service orientation.

Experienced operators may be able to advance to supervisory or training positions. Further advancement generally requires additional education.

Call centre agents are part of the larger National Occupational Classification 1453: Customer Service, Information and Related Clerks. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Management, Administrative and Other Support Services**
- **Information, Culture and Recreation**
- **Retail Trade**
- **Transportation and Warehousing**
- **Finance, Insurance and Real Estate**
- **Public Administration**
- **Utilities**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 15,600 Albertans are employed in the Customer Service, Information and Related Clerks occupational group which is expected to grow 1.2 to 2.2 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 180 to 350 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since call centre operators form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for call centre agents.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Call Centre Agents occupational group working part-time or full-time earned from **$15,300 to $73,300 a year.** The average salary was **$37,100 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Call Centre Association (ACCA) website: www.abcallcentre.com

Related Occupational Profiles

Airline Ticket Agent
Bus Line Ticket Agent
Customer Support Analyst
Dispatcher
Retail Salesperson
Sales Representative (Wholesale, Nontechnical)
Telemarketer
Telephone Operator

Related High School Subjects

Language Arts; and Management and Marketing

Related Post-Secondary Fields of Study

Clerical and Administrative Support; and Personal and Food Services

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For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Canadian Forces Personnel - Commissioned Officer

Produced JANUARY 2005

Commissioned officers plan, organize, lead and manage operations and training activities in the Canadian Forces.

NOC Number(s): 0643
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover (occupational growth information is not available)
Interests: **D M s**

Duties

Commissioned officers perform some or all of the following duties:

- plan, organize and command the activities of military combat units and crews on ships and aircraft
- develop and implement military procedures and policies
- direct subordinates in training, and co-ordinate and direct the activities of the units under their command
- assume responsibility for the welfare, morale and discipline of their units
- review unit performance, prepare reports and provide briefings for superiors
- command and lead units as part of United Nations' peace-keeping or peace-making forces.

Commissioned officers are classified in the following groups:

Aerospace Control
Aerospace Engineering
Air Field Engineering
Air Navigation
Air Operations
Armour
Artillery
Chaplain
Combat Engineering
Communications and Electronics Engineering
Dental
Electrical and Mechanical Engineering
Flight Engineering
Health Care Administration
Infantry
Legal
Logistics
Maritime Engineering
Maritime Surface and Sub-surface
Medical
Military Police
Nursing
Personnel Selection
Pharmacist
Physiotherapist
Pilot
Public Affairs
Social Work
Training Development

Working Conditions

Commissioned officers must adhere to Canadian Forces dress regulations and wear uniforms when on duty. Other working conditions vary a great deal.

Commissioned officers may be posted anywhere in Canada or overseas, and are subject to transfer. Some assignments involve exposure to dangerous situations.

Personal Characteristics

Commissioned officers need the following characteristics:

- leadership ability
- team skills
- physical fitness
- self-discipline, perseverance and initiative
- the ability to conform to rules
- maturity and good judgment
- good communication skills.

They should enjoy co-ordinating information to command activities, implementing miltary policies and procedures and supervising subordinates.

Educational Requirements

There are several entry plans for commissioned officers in the Canadian Forces. For each plan, candidates must:

- be Canadian citizens
- meet age requirements and basic medical and physical standards
- have no outstanding obligations to the judicial system
- be willing to relocate.

Entry is competitive and not all entry plans are open at all times. Candidates for specific classifications are recruited only when there is a forecasted need for personnel in those classifications. When openings are forecast, applications on file are reviewed and candidates selected.

There are six entry plans:

1. Regular Officer Training Plan (ROTP)
   - This entry plan is for candidates who want to obtain a degree at a military college or civilian university, subsidized by the Canadian Forces.
   - Applicants must be at least 16 years of age and completing a course of study leading to an advanced high school diploma with English 30 or French 30 and Math 30 (Math 31 recommended). Applicants for science and engineering programs must have Physics 30, Chemistry 30 and Math 31. Applicants for the preparatory year must be in a program of study leading to the completion of Grade 11 in an advanced high school curriculum.
   - There is a mandatory period of service of up to five years after graduation. Seven years is standard for pilots.
2. Reserve Entry Training Plan (RETP)
   - This entry plan is for candidates who want to obtain a degree at a military college at their own expense. RETP cadets are not paid during the academic year, but are employed in the summer. Scholarships, bursaries and cadetships are available.
   - The entry requirements are the same as those for the ROTP.
   - There is no mandatory period of service in the regular forces.
3. Direct Entry Officer (DEO)
   - This entry plan is for candidates who already hold an appropriate university degree or technology diploma for the classification they wish to enter.
   - After wings graduation, there is a seven-year mandatory period of service for Pilot and four years for Air Navigator.
4. Medical Officer Training Plan (MOTP)
   - This entry plan is designed to subsidize candidates who have been accepted without condition in any of the last three years of a medicine program at a Canadian university or are in their first or second year of internship and are within 57 months of obtaining a license to practice medicine.
   - There is a three year period of mandatory service, after a license to practice is obtained, for those whose training

was subsidized for 46 months or less (four years for those subsidized longer).

5. Dental Officer Training Plan (DOTP)
   - This entry plan is designed to subsidize candidates who have been accepted without condition into any of the last four years of a dentistry program at a Canadian university.
   - The period of mandatory service varies depending upon how long the candidate's training was subsidized.

6. Dietetic Internship Training Program (DITP)
   - This entry plan is for candidates who already have a bachelor degree with a major in nutrition and/or food services administration and who wish to intern in a military or civilian environment.
   - There is a three year mandatory period of service.

All officers must successfully complete a basic training course which is conducted for most classifications at **Canadian Forces Leadership and Recruitment School** in St. Jean, Quebec. Unless they are fluently bilingual at the time of enrolment, most officers receive instruction in their second official language in the period between basic officer training and initial classification training.

Employment and Advancement

Commissioned officers are employed by the Canadian Forces. Competition for officer training positions is keen. Promotions are based on time in rank, performance and the availability of positions. After completing the required term of service, officers may transfer their skills to related civilian occupations.

Salary

While officers are in training, their entry plans determine how much they are paid. ROTP officers earn $1,200 a month while in university. After training, there are separate rates of pay for general officers and specialist officers. The following are **2005** sample pay ranges for general service officers.

- Second Lieutenant: **$38,000 to $40,000 a year**
- Lieutenant: **$41,000 to $45,000 a year**
- Captain: **$60,000 to $80,000 a year**

Medical, dental, legal and pilot officers have higher pay scales than general service officers.

Benefits include environmental allowances which depend on postings, annual holidays, clothing upkeep allowance, pension plan, free medical and dental coverage, and education allowance.

Other Sources of Information

Canadian Forces Recruiting website: www.recruiting.forces.gc.ca

Royal Military College (Kingston, Ontario) website: www.rmc.ca

Related Occupational Profiles

Aerospace Engineer
Air Traffic Controller
Airline Pilot
Canadian Forces Personnel - Non Commissioned
Dentist
Electrical Engineer
Flight Service Specialist
Helicopter Pilot
Human Resources Professional
Lawyer
Meteorologist
Pharmacist
Physician
Physiotherapist
Public Relations Representative
Registered Nurse
Social Worker

Related High School Subjects

Enterprise and Innovation; Foods; Language Arts; Languages (other than English); Logistics; Management and Marketing; Mathematics; Physical Education; Science (Biology; Chemistry; and Physics); and Social Studies

Related Post-Secondary Fields of Study

Aviation; Health Care and Medical Sciences; Human Ecology, Fashion and Food Sciences; and Sciences

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For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Canadian Forces Personnel - Non Commissioned

Produced JANUARY 2005

Non-commissioned members are skilled trades personnel who provide operational and support services in the Canadian Forces.

NOC Number(s): 6464
Minimum Education: At least Grade 10
Employment Outlook: Employment turnover (occupational growth information is not available)
Interests: **M O s**

Duties

Many of the occupations considered trades in the Canadian Forces are similar to civilian trades; some are unique to the military. The Canadian Forces has many entry-level trades including:

- Aerospace Control Operator
- Aerospace Telecommunication and Information Systems Technician
- Aircraft Structures Technician
- Armoured Soldier
- Artillery Soldier (Field or Air Defence)
- Aviation Systems Technician
- Avionics Systems Technician
- Biomedical Electronics Technologist
- Boatswain
- Combat Engineer
- Communicator Research Operator
- Construction Technician
- Cook
- Dental Technician
- Electrical Distribution Technician
- Electrical Generating Systems Technician
- Fire Control Systems Technician
- Fire Fighter
- Hull Technician
- Imagery Technician
- Infantry Soldier
- Land Communication and Information Systems Technician
- Line Technician
- Marine Electrician
- Marine Engineering Mechanic
- Materials Technician
- Medical Laboratory Technologist
- Medical Radiation Technologist
- Medical Technician
- Meteorological Technician
- Military Police
- Mobile Support Equipment Operator
- Musician
- Naval Combat Information Operator
- Naval Communicator
- Naval Electric Sensor Operator

- Naval Electronics Technician (Acoustic, Communications or Tactical)
- Naval Weapons Technician
- Plumbing and Heating Technician
- Postal Clerk
- Refrigeration and Mechanical Systems Technician
- Resource Management Support Clerk
- Signal Operator
- Steward
- Supply Technician
- Tactical Acoustic Sensor Operator
- Traffic Technician
- Vehicle Technician
- Water, Fuel and Environmental Technician
- Weapons Technician (Land).

Working Conditions

Military personnel must wear uniforms when on duty and conform with Canadian Forces rules and regulations. The working environment and hours of work for non-commissioned personnel vary from one trade to another.

All military personnel are subject to transfer. Some assignments involve exposure to dangerous situations.

Personal Characteristics

Non-commissioned members of the Canadian Forces need the following characteristics:

- reliable and dependable
- loyal
- willing to conform to rules
- in good physical condition
- ambitious
- self-disciplined
- able to work well as part of a team.

Educational Requirements

Applicants for non-commissioned Canadian Forces personnel positions must:

- be Canadian citizens
- be at least 16 years of age for Reserve or 17 for full-time Regular Force
- have at least Grade 10 (33 Alberta high school credits) or equivalent education
- have no outstanding obligations to the legal system
- meet medical and physical requirements
- be willing to relocate as required.

The selection process is competitive and, as a general rule, those who have more education or related training have an advantage. High school graduates are more likely to succeed in the Canadian Forces.

The selection process includes a personal interview, aptitude and fitness testing, and a medical examination. Applicants must provide documentation such as school transcripts, social insurance number, birth certificate, two letters of reference and a completed Canadian Forces application form.

Those selected for enrolment are offered positions as they become available. Recruits are allowed a reasonable time to settle their personal affairs or to complete a school year before being sent for basic training in at the **Canadian Forces Leadership and Recruitment School** in St. Jean, Quebec.

The emphasis in basic training is on teamwork, drill, physical fitness and classroom instruction about the Canadian Forces. After successful completion of basic training, recruits are assigned to other bases in Canada to learn their trade and, depending on their trade, to specialized occupational training.

Enrolment in the Canadian Forces requires recruits to commit themselves to a three year initial contract. While there are provisions for remuster (changing trades), it is only allowed in exceptional circumstances. Therefore, applicants should take great care in choosing a trade and, if there are no current vacancies, should consider re-applying at a later date rather

than joining the Forces in trades that do not really interest them.

After leaving the Canadian Forces, those in trades similar to those governed by the Alberta Apprenticeship and Industry Training Act may apply for a journeyman certificate. Each application is assessed individually to determine if certification requirements have been met. Applicants may be required to take journeyman or progressive examinations. For more information, see the Apprenticeship and Industry Training website.

Employment and Advancement

After training, personnel are posted to a Canadian Forces base, unit or ship.

People in the military trades start as privates. Promotions are by competition and are awarded according to skill, time in a rank and job performance. Privates may advance in rank to corporal, master corporal, sergeant, warrant officer, master warrant officer and chief warrant officer. Promotion to the rank of corporal is achieved by attaining specific levels of training, normally after a minimum of four years of service. Some entry plans offer opportunities for advancement to the rank of corporal after a shorter time period. Retirement is compulsory at age 60.

Most large cities have at least one Canadian Forces Reserve unit. The Reserves offer part-time military training in a variety of trades during the academic year and full-time employment during the summer months. Some opportunities exist for trained Reserve personnel to be employed on a full-time basis for a fixed period of time.

Salary

Privates earn from **$27,000 to $39,000 per year.** Annual salaries for corporals range from **$44,000 to $50,000 (2005 figures).**

People in the military trades are entitled to four weeks of annual vacation with pay (five weeks after five years of service), free medical and dental care, a free dental plan for dependents and a pension plan.

Other Sources of Information

Canadian Forces Recruiting website: www.recruiting.forces.gc.ca

Related Occupational Profiles

Aircraft Maintenance Engineer
Automotive Service Technician
Avionics Technologist
Biomedical Engineering Technologist
Bylaw Enforcement Officer
Canadian Forces Personnel - Commissioned Officer
Cook
Correctional Officer
Firefighter
Mail Sorter
Medical Laboratory Technologist
Police Officer
Power System Electrician
Private Investigator
Radiological Technologist
Refrigeration and Air Conditioning Mechanic
Telecommunications Engineering Technologist

Related High School Subjects

Community Health; Electro-Technologies; Fabrication Studies; Foods; Information Processing; Language Arts; Logistics; Mathematics; Mechanics; and Physical Education

Related Post-Secondary Fields of Study

Trades, Industrial and Related Training

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Cardiology Technologist

Produced NOVEMBER 2004

Cardiology technologists perform cardiology tests to provide information needed in the diagnosis and treatment of heart disease.

NOC Number(s): 3217
Minimum Education: 1 year post-secondary education/training
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: **O M i**

Duties

Cardiology technologists work with other health care professionals involved in diagnostic testing, monitoring and heart function evaluation. They may use a variety of electronic monitoring equipment for:

- electrocardiography
- multi-stage stress testing
- holter monitor analysis
- arrhythmia monitor analysis
- tilt table testing
- pacemaker clinics
- blood pressure analysis.

In general, cardiology technologists:

- prepare patients for testing by explaining procedures
- obtain medical history information
- ensure patient comfort and safety during procedures
- implement resuscitation measures when necessary
- provide results of diagnostic procedures for physician interpretation
- immediately notify physicians and nursing staff when they recognize life-threatening arrhythmias (heartbeats)
- maintain equipment and trouble-shoot technical problems
- assist in research projects.

Cardiology technologists must keep up to date with changing technologies.

Working Conditions

Cardiology technologists work rotating shifts in health care environments. Their work is physically demanding: they are on their feet most of the time and may be expected to help lift and move patients from wheelchairs to beds.

Cardiology technologists must follow standard infection control procedures.

Personal Characteristics

Cardiology technologists work with people who are not feeling well and may have fears about testing. Technologists must be:

- mature and self-confident
- able to communicate understanding and reassurance to patients
- able to pay close attention to details
- able to think and act quickly and appropriately in emergency situations
- able to work with little direct supervision
- organized.

They should enjoy working with computers and electronic equipment at tasks requiring precision, having clear guidelines and established methods for their work, and compiling and recording test results.

Educational Requirements

In Canada, the following institutions offer training programs related to cardiology technology:

- **British Columbia Institute of Technology (BCIT)** in Burnaby, B.C. offers a distance education program.
- **CDI College** in Hamilton, Ottawa and Toronto, Ontario.
- **Mowhawk College of Applied Art and Technology** in Hamilton, Ontario.

In general, the entrance requirement is a high school diploma with related science courses, or equivalent. For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Alberta employers generally require applicants for cardiology technology positions to be registered members of the Canadian Society of Cardiology Technologists (CSCT) and the Alberta Society of Cardiology Technologists (ASCT).

Employment and Advancement

(section revised JANUARY 2006)

Most cardiology technologists work in hospital cardiology departments. Some are employed in private laboratories and clinics. In smaller rural hospitals, they may have other duties (e.g. medical laboratory services) which require additional training (see the Medical Laboratory Technologist occupational profile).

Without additional education, advancement opportunities in this occupation are limited.

In Alberta, most people employed as cardiology technologists work in the **Health Care and Social Assistance** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Health Care and Social Assistance industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 100 Albertans are employed in the Cardiology Technologists occupational group which is expected to grow 2.5 to 3.5 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Cardiology Technologists occupational group working part-time or full-time earned from **$25,600 to $55,900 a year.** The average salary was **$30,300 a year.**

According to the Alberta Society of Cardiology Technologists, 2004 salaries in this occupation ranged up to $62,700 in Alberta.

For information about current collective agreements in the public and not-for-profit sectors, see the Health Sciences Association of Alberta (HSAA) website.

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

Alberta Society of Cardiology Technologists (ASCT) website: www.asrct.com

Canadian Society of Cardiology Technologists (CSCT) website: www.csct.ca

Health Sciences Association of Alberta (HSAA) website: www.hsaa.ca

Related Occupational Profiles

Diagnostic Medical Sonographer
Electroneurophysiology (ENP) Technologist

Related High School Subjects

Community Health; Language Arts; Mathematics; Physical Education; and Science (Biology; Chemistry; and Physics)

Related Post-Secondary Fields of Study

Health Care and Medical Sciences

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Career and Technology Studies Teacher

Produced JANUARY 2006

Career and technology studies (CTS) teachers help junior and senior high school students make effective career decisions, develop skills for personal living, and enter the workforce or further education.

NOC Number(s): 4141
Minimum Education: 4 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **S I D**

Duties

Alberta's Career and Technology Studies Program is made up of twenty-two topic areas (strands) from which schools select content and organize courses. There is one standard Career and Technologies Studies program for the province but each school selects content based on student and community needs, and available resources. No one school is likely to offer all CTS courses or even content drawn from all twenty-two strands.

In general, CTS teachers:

- teach courses drawn from one or more strands
- develop content and various methods of teaching content
- keep up to date in their fields by attending courses, workshops, conferences and seminars.

The duties of CTS teachers are similar to those of other teachers. For more information, see the Secondary School Teacher occupational profile.

Working Conditions

CTS teachers work in school laboratories and workshops. Some work environments simulate office, workshop, salon, clinic, home or other settings found in business, industry and government. Many hours are spent outside class time working with individual students, preparing lessons and marking assignments.

Teaching can be a demanding job requiring a great deal of physical, mental and emotional energy.

Personal Characteristics

Career and technology studies teachers need the following characteristics:

- a genuine liking for and interest in young people
- strong leadership and organizational skills
- a good sense of humour
- patience, compassion, tolerance and understanding
- good mental, emotional and physical health and stamina
- the ability to communicate effectively with students, colleagues, employers, administrators, parents and the community at large.

They should enjoy finding different ways to solve problems and present information, and organizing and co-ordinating the work of others.

Educational Requirements

Career and technology studies teachers need a combination of knowledge and skills in education and their subject area.

In Alberta, Career and Technology Studies teacher preparation programs are offered by the following institutions:

- The **University of Alberta** in Edmonton offers Bachelor of Education (B.Ed.) degree and after-degree programs with a career and technology studies pattern. The admission requirement for the Faculty of Education is one year of pre-professional studies with 24 units of transferable course weight to the student's program major.

Admission to pre-professional studies programs generally requires a competitive average in English Language Arts 30-1 (or English 30), three 30 level humanities or science subjects and one other approved 30 level subject. Journeymen who have four years of work experience after completing apprenticeship and those who have a combination of eight years training and work experience in an approved non-apprenticable field may be awarded advanced standing.

- The **University of Lethbridge** offers five year combined degree programs and an after-degree B.Ed. program with a specialization in career and technologies studies. Students are admitted to the Faculty of Education after two or three years of university study. Admission to other programs generally requires a 65 per cent average in English Language Arts 30-1 (or English 30) and three other 30 level courses, plus a fifth Grade 12 subject.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Other Requirements

Teaching some CTS curriculum strands requires an appropriate Alberta Journeyman Certificate.

Employment and Advancement

CTS teachers are employed by:

- junior and senior high schools
- colleges and vocational centres with integrated or technical occupational programs.

Experienced CTS teachers may advance to administrative positions or specialist positions in large schools, school districts, departments of education, colleges or universities.

CTS teachers are part of the much larger National Occupational Classification 4141: Secondary School Teachers. In Alberta, people employed in this classification work in the **Educational Services** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Educational Services industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 16,750 Albertans are employed in the Secondary School Teachers occupational group which is expected to grow 1.3 to 2.3 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 210 to 390 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since CTS teachers form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for CTS teachers.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

The Alberta Teachers' Association estimates that about 400 teaching positions will become vacant each year due to retirement.

Salary

Since salaries and benefits are determined by collective agreements between school boards and their teachers, salaries vary from one board to another. However, all teachers are paid according to a grid system based on number of years of university training and number of years of teaching experience.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Secondary School Teachers occupational group working part-time or full-time earned from **$23,400 to $100,600 a year.** The average salary was **$64,700 a year.**

All teachers employed in Alberta's publicly supported schools are members of the Alberta Teachers' Association (ATA) and are automatically included under the Alberta Teachers Pension Plans Act. Collective agreements negotiated by the ATA on behalf of Alberta's teachers provide them with a range of benefits including:

- life and disability insurance
- extended health care coverage
- vision and dental insurance
- professional improvement leave opportunities.

Holidays and pensions are specified by provincial legislation. However, teachers often use the summer break period of July and August, Christmas or spring break holidays for professional development or for fulfilling additional professional responsibilities.

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Teachers' Association (ATA) website: www.teachers.ab.ca

Related Occupational Profiles

Accounting Technician
Agrologist
Automotive Service Technician
Carpenter
College, Technical or Vocational Instructor
Computer Programmer
Electronics Engineering Technologist
Elementary School Teacher
Engineering Design and Drafting Technologist
Fashion Designer
Hairstylist
Home Economist
Human Ecologist
Private Trainer/Facilitator
Secondary School Teacher
Special Needs Teacher
Welder

Related High School Subjects

Agriculture; Communication Technology; Community Health; Construction Technologies; Cosmetology Studies; Design Studies; Electro-Technologies; Energy and Mines; Enterprise and Innovation; Fabrication Studies; Fashion Studies; Financial Management; Fine Arts (Dance; Drama; Music; and Visual Arts); Foods; Forestry; Information Processing; Language Arts; Legal Studies; Logistics; Management and Marketing; Mathematics; Mechanics; Science (Biology; Chemistry; and Physics); Tourism Studies; and Wildlife

Related Post-Secondary Fields of Study

Agriculture and Related Technologies; Business, Management and Administrative Studies; Communications; Computer and Information Technology; Education and Library Studies; Engineering and Science Technologies; Engineering, Architecture and Related Studies; Environment, Forestry and Related Studies; Fine Arts and Performing Arts; Health Care and Medical Sciences; Human Ecology, Fashion and Food Sciences; Social, Community and Protective Services; and Trades, Industrial and Related Training

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For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Career Development Professional

Produced NOVEMBER 2005

Career development professionals advise, coach, provide information and support people who are planning, seeking and managing their life/work direction.

NOC Number(s): 4213
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **S M I**

Duties

Career development professionals help clients of all ages:

- make plans and decisions related to choosing a career direction
- select education and training programs
- balance work and other life roles
- navigate career transitions and stages
- enhance career satisfaction
- find employment or self-employment opportunities, write resumes, develop portfolios and prepare for interviews.

Working with clients individually or in groups, career development professionals may:

- help people develop a better appreciation of their unique characteristics and how those characteristics relate to career choices
- use various assessment tools to help clients identify their interests, values, beliefs, lifestyle preferences, aptitudes and abilities, and relate them to the world of work
- help clients identify educational requirements and develop training plans
- facilitate career management and career decision-making workshops
- work with clients who have disabilities, language and cultural differences, or other special needs that affect their employment prospects
- help clients deal with barriers to achieving their career plans
- help employed clients plan career laddering within organizations, cope successfully with job dissatisfaction, or make occupational or job changes
- provide current labour market information to help clients make realistic occupational or employment decisions
- market clients to potential employers and help clients find job or work experience placements
- assist clients with implementing effective employment search strategies, writing resumes, and developing career portfolios and interview skills
- plan and implement career and employment-related programs
- refer clients to appropriate services to address their particular needs
- work co-operatively with community groups and agencies, businesses and other organizations involved in providing career planning resources
- use computers to write reports and proposals, and research information on the Internet
- perform related administrative tasks such as keeping records.

For information about school guidance counsellors and counsellors in post-secondary institutions, see the Educational Counsellor occupational profile.

Working Conditions

Career development professionals may work in a variety of settings but usually work in offices where they can conduct private interviews with clients and in classrooms or boardrooms where they conduct group sessions. Depending on the organization, their hours of work may include some evening and weekend work.

Personal Characteristics

Career development professionals need the following characteristics:

- a genuine interest in and respect for people from all walks of life
- patience, understanding and the ability to listen non-judgementally
- excellent oral and written communication skills and presentation skills
- objectivity and tact
- the ability to motivate and inspire clients
- the ability to facilitate communication in groups of eight to 20 people
- good organizational and planning skills
- the ability to work effectively with other professionals and community agencies.

They should enjoy consulting with people, compiling information and working with clients to develop innovative solutions to problems.

Educational Requirements

Most career development professionals have post-secondary education in a related discipline such as psychology, education, social work or human resources development. Increasingly, employers are looking for applicants who have a certificate, diploma or degree in career development, or an equivalent combination of education and experience.

Post-secondary institutions throughout Alberta offer psychology, education, social work and/or human resources development programs. For more information, see the Psychologist, Educational Counsellor, Social Worker and Human Resources Professional occupational profiles.

In Alberta, the following institutions offer post-secondary programs in career development:

- **Athabasca University** offers a one year (30 credit) University Certificate in Career Development program by distance education. Applicants must be residents of Canada who are at least 18 years of age. This program is intended for people who have work experience related to career development.
- The **Campus Alberta Graduate Program in Counselling**, a tri-university partnership of Athabasca University, the University of Calgary and the University of Lethbridge, offers a Master of Counselling degree program with a specialization in career counselling. The entrance requirement is a minimum grade point average (GPA) of 3.00/4 in the last ten full-course equivalents of a four year bachelor's degree program that includes specified courses in psychology or educational psychology and a counselling skills course, or equivalent.
- **Concordia University College of Alberta** in Edmonton offers university credit and non-university credit courses in career development. Students may enrol in three year or four year Bachelor of Arts (BA) and Bachelor of Science (B.Sc.) degree programs with a minor (18 to 24 credits) in career development. The entrance requirement for the degree programs is an average of at least 60 per cent in five appropriate Grade 12 subjects. Non-university credit courses are offered in the Certificate (19 credits) or Diploma (33 credits) in Career Development programs through the Continuing Education Division. The entrance requirement for the Certificate and Diploma programs is an appropriate degree or other relevant post-secondary education, or equivalent experience. Courses may be taken on campus or through self-study.
- The **University of Calgary** offers a part-time (300 hour) Career Development certificate program through Continuing Education. Applicants must have completed some post-secondary course work and have three to five years of relevant work experience, or equivalent.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

On an ongoing basis, career development professionals must keep up to date with changes in educational, occupational and labour market information.

Other Requirements

Certification is voluntary. The **Career Development Association of Alberta** grants the designation Certified Career Development Professional (CCDP) to applicants who meet educational, experience and ethical requirements.

Employment and Advancement

(section revised JANUARY 2006)

Career development professionals are employed by:

- provincial and federal government departments
- educational institutions (public, separate and post-secondary schools)
- the human resources departments of large organizations
- private agencies
- not-for-profit organizations.

An increasing number of career development professionals work on a contract basis or are self-employed.

Advancement opportunities depend on the nature and size of the employing organization, and the career development professional's qualifications.

Career development professionals are part of the larger National Occupational Classification 4213: Employment Counsellors. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Health Care and Social Assistance**
- **Management, Administrative and Other Support Services**
- **Public Administration**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 1,250 Albertans are employed in the Employment Counsellors occupational group which is expected to grow 1.0 to 2.0 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 10 to 30 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since career development professionals form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for career development professionals.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Salaries for career development professionals vary depending on the organization and the individual's qualifications.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Employment Counsellors occupational group working part-time or full-time earned from **$16,500 to $132,000 a year**. The average salary was **$41,900 a year**.

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Career Development Association of Alberta (CDAA) website: www.careerdevelopment.ab.ca

Related Occupational Profiles

Educational Counsellor
Home Economist
Human Ecologist
Human Resources Professional
Life Skills Coach
Occupational Therapist
Private Trainer/Facilitator
Psychologist
Social Worker

Related High School Subjects

Communication Technology; Language Arts; Management and Marketing; and Social Studies

Related Post-Secondary Fields of Study

Education and Library Studies; Humanities and Languages; Social Sciences, Law and Religious Studies; and Social, Community and Protective Services

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For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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OCC info Alberta Occupational Profiles

Alberta Human Resources and Employment

Carpenter

Apprenticeship and Industry Training

Produced FEBRUARY 2006

Carpenters construct, erect and repair buildings and other structures made of wood, wood substitutes, steel and other materials.

NOC Number(s): 7271
Minimum Education: Apprenticeship Trade - Grade 9
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: O M I

Duties

Carpenters' duties vary from one position to another.

- In **residential jobs**, they crib the basement, build a framework of walls, roof, exterior and interior finishes, and install doors, windows, flooring, cabinets, stairs, handrails, panelling, moulding and ceiling tiles.
- In **commercial or industrial jobs**, they build concrete forms, scaffolding, bridges, trestles, tunnels, shelters, towers and other structures.
- In **maintenance jobs**, they repair and remodel existing structures of all kinds.

In any type of position, carpentry tasks generally involve:

- reading blueprints or getting instructions from a supervisor
- doing the layout (selecting materials, planning sequences and methods of work, measuring and marking materials to avoid costly mistakes or omissions)
- cutting and shaping materials and joining them with nails, screws, bolts or glue
- checking completed units to be sure they are level, square, plumb and the right size, shape and location.

Carpenters must work accurately and economically and follow national and local building codes. Some carpenters specialize in a particular type of work such as framing, bench or finishing work.

Working Conditions

Working conditions vary from one job to another. On jobs where the work is primarily indoors, carpenters are permanently employed and work a regular 40-hour week. On other jobs where the work is primarily outdoors, carpenters are subject to seasonal unemployment and routinely work overtime in peak periods. There is some risk of injury due to slips, falls and falling objects, and when working with sharp hand and power tools.

Carpenters may be required to lift items weighing up to 25 kilograms.

Personal Characteristics

Carpenters need the following characteristics:

- the ability to stand, crouch and kneel for long periods of time
- manual dexterity
- good sense of balance when working on scaffolds
- the ability to solve math problems quickly and accurately
- the ability to get along well with others on a work team.

They should enjoy creating things with their hands.

Educational Requirements

To work in Alberta, carpenters must be ONE of the following:

- registered apprentices
- certified journeymen
- working for an employer who is satisfied that they have the skills and knowledge expected of certified journeymen
- self-employed.

To **register** with **Alberta Apprenticeship and Industry Training**, apprentices must:

- have at least an Alberta Grade 9 education (or equivalent) or pass an entrance exam
- find a suitable employer who is willing to hire and train an apprentice. Most employers prefer to hire high school graduates and may select apprentices from among their current employees.

The **term of apprenticeship** is four years (four 12-month periods) that include a minimum of 1,360 hours of on-the-job training and eight weeks of technical training each year. High school students can become apprentices and gain credits toward apprenticeship training and a high school diploma at the same time through the Registered Apprenticeship Program (RAP).

Apprentices are required to provide their own tools.

Applicants who have related training or work experience may be eligible for credit or certification.

Carpenter apprentices may attempt the Interprovincial Exam in the final period of their apprenticeship training and, if successful, are granted a Red Seal (which is recognized in most parts of Canada).

Technical training is arranged by Alberta Apprenticeship and Industry Training and is currently offered at:

- Keyano College in Fort McMurray
- Lakeland College in Vermilion
- Lethbridge Community College
- Medicine Hat College
- the Northern Alberta Institute of Technology (NAIT) in Edmonton and Fairview
- Northern Lakes College in Grouard
- Portage College in Lac La Biche
- Red Deer College
- the Southern Alberta Institute of Technology (SAIT) in Calgary.

Competency-Based Apprenticeship Training (CBAT) is also offered by Lethbridge Community College, Red Deer College and SAIT.

Outside the apprenticeship program, the following post-secondary institutions offer related training:

- the **Northern Alberta Institute of Technology (NAIT)** in Edmonton offers a one year Millwork and Carpentry certificate program. The entrance requirement is Grade 10 with English and math.
- **Red Deer College** offers a one year Carpentry and Construction certificate program. The entrance requirement is Pure Math 10 or Applied Math 20 or Math 23 and English 10 or 23 or equivalent.

Pre-employment programs for prospective apprentices and continuing education programs for journeymen may be offered on an as needed basis by the institution(s) listed above or other schools.

For current information on specfic programs, please check post-secondary calendars or websites.

Employment and Advancement

Most carpenters are employed by construction contractors, are self-employed or do construction or maintenance work for government agencies, utility companies or manufacturing firms.

Carpenters may advance to foreman, supervisor, subcontractor, construction superintendent or contractor positions. Alberta certified journeyman carpenters who have the supervisory or management skills required by industry may apply for an Achievement in Business Competencies Blue Seal by contacting Alberta Apprenticeship and Industry Training.

In Alberta, most people employed as carpenters work in the **Construction** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- time of year (for seasonal jobs)
- trends and **events** affecting overall employment (especially in the Construction industry)
- **location** in Alberta

- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 18,750 Albertans are employed in the Carpenter occupational group which is expected to grow 2.2 to 3.2 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 410 to 600 **new** positions will be created each year **in addition** to job openings created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Apprentice carpenters earn at least 60 per cent of the journeyman wage rate in their place of employment in the first year, 70 per cent in the second, 80 per cent in the third and 90 per cent in the fourth. According to the Alberta Provincial Apprenticeship Committee for this trade, journeyman wage rates vary, but generally range from **$17 to $32 an hour plus benefits** (2004 estimate).

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Carpenters occupational group working part-time or full-time earned from **$19,000 to $84,300 a year.** The average salary was **$72,600 a year.**

Other Sources of Information

Alberta Apprenticeship and Industry Training website: www.tradesecrets.org

Post-secondary institution calendars or websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Construction Industry "Trade Up!" website: www.careersconstruction.com

Calgary Construction Association website: www.cca.cc

Construction Sector Council website: www.csc-ca.org

Related Occupational Profiles

Cabinetmaker
Career and Technology Studies Teacher
Commercial Diver
Construction Craft Labourer
Glazier
Home Inspector
Roofer
Safety Codes Officer
Safety Officer

Related High School Subjects

Construction Technologies; Fabrication Studies; Mathematics; and Physical Education

Related Post-Secondary Fields of Study

Trades, Industrial and Related Training

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Carpet and Upholstery Cleaner

Produced JUNE 2003

Carpet and upholstery cleaners operate cleaning machines to clean carpets, rugs and upholstered furniture at customers' premises or in cleaning plants.

NOC Number(s): 6662.1
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus below average occupational growth in Alberta
Interests: **O M d**

Duties

Duties and responsibilities vary from one employer to another but, in general, carpet and upholstery cleaners:

- load supplies and equipment into trucks or vans
- drive to customers' homes and businesses
- discuss job requirements with customers (e.g. areas to be cleaned, stains requiring special removal techniques)
- move furniture to clear carpeted areas prior to cleaning and replace it afterward, if requested
- use appropriate chemical solutions to clean wall-to-wall carpets and upholstered furniture in homes, automobiles and recreational vehicles
- use the appropriate chemical agents and hand brushes to remove stains such as tar, gum or rust
- respond to customers' questions and concerns
- prepare invoices and accept payments.

Working Conditions

Most carpet and upholstery cleaners work from fairly early in the morning until whenever they have completed the number of jobs they have accepted for the day. Some evening and weekend work may be required.

Carpet and upholstery cleaners work in customers' homes and in cleaning plants. They may be required to travel within a specified service range, and move furniture or equipment weighing up to 25 kilograms. Safety precautions are required to avoid slipping on wet carpet, developing repetitive strain injuries and reacting adversely to chemicals.

Personal Characteristics

Carpet and upholstery cleaners need the following characteristics:

- the stamina and endurance required to be on their feet performing repetitive tasks for hours at a time
- manual dexterity
- the mechanical aptitude required for dealing with equipment failures
- the ability to establish rapport and communicate with all kinds of people
- the ability to work independently or as part of a team.

They should enjoy operating cleaning machines, having clear guidelines and organized methods for their work and determining which cleaning agents should be used to remove stains.

Educational Requirements

Carpet and upholstery cleaners are usually **trained on the job**. There are no standard education or certification requirements other than a valid driver's license. However, employers may prefer to hire job applicants who have a high school diploma or related training (e.g. safety training, fabric cleaning). Some employers require job applicants to:

- provide a crminal record check from the police

- agree to other security checks (e.g. Child Welfare Records check, Protection for Persons in Care Act screening requirements)
- take an English literacy screening test.

Some post-secondary institutions and school board Continuing Education departments offer related courses on an as needed basis. These courses are advertised in local newspapers.

The **Institute of Inspection, Cleaning and Restoration Certification** offers certification for carpet and upholstery cleaners who have taken Institute-approved training courses.

Employment and Advancement

(section revised JANUARY 2006)

Carpet and upholstery cleaners may be self-employed or employees of carpet cleaning companies or large organizations such as department store chains. Prospective carpet cleaners are strongly advised to investigate the reputations of potential employers before applying for jobs. Business practices, approaches to training and pay structures vary considerably from one employer to another. Employers may supply their workers with van-mounted cleaning units, or require them to use portable machines and their own vehicles.

A few experienced carpet and upholstery cleaners advance to supervisory positions or establish their own businesses.

Carpet and upholstery cleaners are part of the larger National Occupational Classification 6662: Specialized Cleaners. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Repair, Maintenance, Personal and Other Services**
- **Management, Administrative and Other Support Services**
- **Retail Trade**
- **Transportation and Warehousing**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 4,450 Albertans are employed in the Specialized Cleaners occupational group which is expected to grow 0.5 to 1.5 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 20 to 70 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since carpet and upholstery cleaners form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for carpet and upholstery cleaners.)

There is a relatively high employment turnover rate in this occupation so demand for new workers is fairly steady. However, there are often many applicants for vacant positions.

Salary

(section revised OCTOBER 2005)

Carpet and upholstery cleaners' earnings vary greatly. Some employers pay hourly wages plus commissions based on the volume of work performed. Other employers pay straight commission based on product sales. In these companies, carpet and upholstery cleaners' earnings vary considerably from one worker to another and from one month to another, depending on the number of jobs they are offered and the number of additional products they sell.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Specialized Cleaners occupational group working part-time or full-time earned from **$12,500 to $152,100 a year.** The average salary was **$28,700 a year.**

Other Sources of Information

Institute of Inspection, Cleaning and Restoration Certification website: www.iicrc.org

Related Occupational Profiles

Auto Detailer
Building Superintendent
Custodian
Dry Cleaning and Laundry Workers
Room/Housekeeping Attendant

Related High School Subjects

Language Arts; and Physical Education

Related Post-Secondary Fields of Study

Trades, Industrial and Related Training

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Cartoonist

Produced MAY 2005

Cartoonists are artists who create cartoon-style illustrations for newspapers, advertisements, magazines, films, television, books, newsletters and greeting cards.

NOC Number(s): 5241.1
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: I M S

Duties

Cartoonists are probably best known for creating comic strips and children's animated television shows. However, cartoons appear in and on all types of media including film, television, advertising, promotional material, newspapers, magazines, packaging and clothing. They may tell a story, provide social commentary or reflect public opinion.

In general, cartoonists:

- get their inspiration from many places and often keep a sketch book or diary of ideas for future use
- make pencil sketches of their ideas or use computer software to draw cartoons
- use a variety of mediums to shade and fill in their outlines (e.g. ink, water colours, markers, transparent washes, computer programs).

They may discuss their ideas and initial drawings with an editor or publisher before finalizing them.

Many cartoonists specialize in a particular type of cartoon:

- **Comic strip artists** draw a series of pictures that tell a short story. Characters in the strips may or may not speak. Often the original drawings are quite large and reduced for publication. Increasingly, popular comic strips are appearing as television specials, cartoon shows and on commercial products such as T-shirts and toys.
- **Editorial cartoonists** create single cartoons for newspapers or magazines. These cartoons are caricatures or comic figures of well-known people or events, often political satires commenting on issues of the day.
- Some cartoonists are **storyboard artists** at advertising agencies or art studios who create animated commercials and animated films. They often prepare drawings that other artists (e.g. illustrators, animators) make into finished ads or films. For more information, see the Animator and Illustrator occupational profiles.

Working Conditions

Cartoonists work at drawing boards and may sit for long periods of time. They must deal with the constant pressure of deadlines.

Personal Characteristics

Cartoonists need the following characteristics:

- creativity, imagination and artistic talent
- the ability to take criticism well
- self-motivation
- a sense of curiosity about politics, sports or life in general
- the ability to meet deadlines.

Editorial cartoonists also need a satirical sense of humour and keen, analytical observation of news events.

All cartoonists should enjoy synthesizing information, finding innovative approaches, taking a methodical approach to tasks requiring precision (e.g. preparing specifications, estimating costs) and consulting with clients.

Educational Requirements

Many successful cartoonists are self-taught but formal art training and computer skills are helpful. A strong writing background is also an asset, particularly for strip cartoons. Editorial cartoonists need some knowledge of political history.

Using cartoons in advertising for products, events, projects, public education or services is very popular. To be able to suggest cartoon ideas that will help sell a client's product or service, cartoonists must keep up to date with publicity and marketing trends.

There are no specialized art programs for cartoonists in Alberta but post-secondary institutions throughout the province offer fine art and visual communications programs that can provide a good foundation for cartooning. Entrance requirements for these programs generally include a high school diploma with English Language Arts 30-1 or equivalent. Admission to some programs requires an average of at least 60 per cent in five appropriate 30 level subjects.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

After completing some basic art training, many cartoonists start by apprenticing with a well-known cartoonist at an advertising agency, design studio or newspaper. Practice is essential to develop a portfolio of work to show potential employers. Cartoonists are advised to ask for constructive criticism from people in the business.

Developing an individual style that is recognizable helps to build a cartoonist's reputation.

Employment and Advancement

(section revised JANUARY 2006)

Most other cartoonists work on a freelance basis. They may work for:

- advertising agencies
- newspapers
- magazines
- book publishing companies
- video and film production studios
- greeting card companies
- graphic design studios
- government communications or public relations departments.

Some editorial cartoonists are employed full-time by major newspapers and magazines. Their work is often transmitted electronically to several newspapers at one time.

Cartooning is a very competitive field that is difficult to enter. Freelance cartoonists must spend a lot of time marketing their drawings and ideas to potential employers. They often need to develop a working relationship with ten or more clients on a regular basis to make a modest income. Some cartoonists also work as illustrators or graphic designers (for more information, see the Illustrator and Graphic Designer profiles).

Cartoonists are part of the larger National Occupational Classification 5241: Graphic Designers and Illustrators. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Professional and Technical Services**
- **Information, Culture and Recreation.**

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

About 6,950 Albertans are employed in the Graphic Designers and Illustrators occupational group which is expected to grow 1.6 to 2.6 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 110 to 180 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since cartoonists form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for cartoonists.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Cartoonists may earn very little money or a lot if they become well known. A few very successful cartoonists syndicate their work.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Graphic Designers and Illustrators occupational group working part-time or full-time earned from **$15,800 to $92,600 a year.** The average salary was **$37,200 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Related Occupational Profiles

Animator
Graphic Designer
Illustrator

Related High School Subjects

Communication Technology; Enterprise and Innovation; Financial Management; Fine Arts (Visual Arts); Language Arts; Management and Marketing; and Social Studies

Related Post-Secondary Fields of Study

Communications; and Fine Arts and Performing Arts

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Cashier

Produced OCTOBER 2003

Cashiers total bills, accept payments, make change, provide information, fill out forms and provide receipts for goods and services in supermarkets, department stores, theatres, restaurants and other establishments.

NOC Number(s): 6611
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus below average occupational growth in Alberta
Interests: **M O s**

Duties

Most cashiers operate electronic cash registers and optical price scanners. At the beginning of each shift, they are given a specified amount of money in a drawer and, at the end of the shift, may be required to balance their cash against total cash receipts. Cashiers must be familiar with the store's prices, policies and procedures to:

- accept payments in cash or by cheque, credit card, traveller's cheque, point of sale or direct debit card
- process coupons, discounts and gift certificates
- provide refunds.

Cashiers or checkout clerks **in supermarkets and cafeterias:**

- greet customers
- enter the prices of all items or scan the products, and subtract the value of any coupons or special discounts
- provide information such as where to find products
- total bills and accept payment
- thank customers and offer carry-out service
- keep the checkout area clean and orderly
- ensure that they have adequate change and appropriate cash levels at all times
- use the paging system to request information or assistance as needed.

They may also:

- weigh produce and bulk food
- package or bag purchased merchandise
- return unwanted items to the shelves and stock shelves during slack periods, or stand on the line ready to serve the first available customer.

Cashiers **in retail stores** tabulate bills, accept payment and pack purchased goods in bags or boxes. Most employers in the retail industry prefer to hire people who also act as salespersons (for more information, see the Retail Salesperson occupational profile).

Cashiers **in restaurants** may also:

- accept reservations or take-out orders
- type menus
- sell candy and cigarettes
- seat guests.

Box office cashiers sell tickets for admission to places of entertainment such as theatres, stadiums and skating rinks. In general, they:

- provide information about events in person or via telephone, Internet or mail
- describe venue layouts and seating locations to help customers choose the best possible seats
- fill reservations for seats.

Theatre box office cashiers often do public relations work as well.

Cashiers who work in **government departments and other large organizations** such as utility companies receive payment for things such as utility bills, taxes and parking fines.

Working Conditions

Most cashiers stand in small booths or behind counters for long periods of time, sometimes near store entrances where they are subject to cold drafts in the winter. During busy periods, there may be considerable pressure to work rapidly while still maintaining accuracy and a pleasant manner. Depending on the work setting, cashiers may lift items weighing up to 10 kilograms.

Cashiers in supermarkets, cafeterias, theatres and retail stores often work evenings and weekends, and may work part-time to cover busy periods. Restaurant and hotel cashiers often work rotating shifts without set days off. Vacation time off may be restricted to times of the year that are not as busy.

Personal Characteristics

Cashiers work with the public and therefore must be courteous, personable, outgoing, patient, tactful and neat in appearance. They also must be able to:

- keep cool under pressure
- describe products and services clearly in person and/or on the telephone
- remember faces, products, price codes and sales promotions.

They should enjoy having clear instructions to follow, balancing total payments and sales at the end of a shift, packing goods and operating equipment, and having daily contact with the public.

Educational Requirements

The primary requirement for cashiers is the ability to provide good customer service and work with numbers accurately and quickly. Computer experience is an asset. Cashiers who work for businesses where currency is exchanged must know how to process foreign exchanges.

Cashiers may work with large sums of money and therefore must be bondable (acceptable to a bonding company as a responsible person). Cashiers are usually **trained on the job**. Some employers provide short training sessions before putting inexperienced cashiers on the selling floor.

Employment and Advancement

(section revised JANUARY 2006)

Cashiers are employed in:

- supermarkets and food stores
- drug stores
- department stores
- restaurants
- theatres
- business offices
- hotels and motels
- telephone utility companies.

There are opportunities to move into positions in other store departments or to advance to supervisory positions. In some establishments, cashiers may advance to assistant or branch manager positions.

In Alberta, most people employed as cashiers work in the following industries:

- **Retail Trade**
- **Accommodation and Food Services**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation**.

Over 37,000 Albertans are employed in the Cashiers occupational group which is expected to grow 0.7 to 1.7 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 250 to 630 **new** positions will be created each year **in addition** to job openings created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

In many retail establishments, the starting wage for cashiers is at or just above minimum wage. Job benefits may include merchandise discounts.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Cashiers group working part-time or full-time earned from **$9,700 to $46,000 a year.** The average salary was **$18,800 a year.**

Related Occupational Profiles

Airline Ticket Agent
Bus Line Ticket Agent
Financial Customer Service Representative
Retail Shelf Stocker

Related High School Subjects

Language Arts; Mathematics; Physical Education; and Tourism Studies

Related Post-Secondary Fields of Study

Personal and Food Services

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Casino Dealer

Produced SEPTEMBER 2004

Casino dealers run gaming tables for blackjack (twenty-one), baccarat, poker, craps, roulette and other games in gambling casinos.

NOC Number(s): 6443.2
Minimum Education: Less than high school
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: S M D

Duties

In general, casino dealers:

- conduct gambling games smoothly, legally and according to casino rules
- exchange money for casino chips
- make sure players have placed their bets before play begins
- announce winning numbers or colours
- compute payoffs and pay winning bets
- collect losing bets
- respond to questions about game rules and casino policies.

Their specific duties vary, depending on the type of game.

Blackjack dealers stand at a table and deal cards according to established game procedures. They may deal cards from one or more decks, or from a shoe (a box that holds one or more decks of cards and dispenses cards individually). After all the players at a blackjack table have decided how many cards they want, dealers compare their hands (cards) to each player's hand to determine who wins and who loses.

Baccarat dealers may work in teams of up to three people, depending on the size of the table and number of players. When they work in teams of three, one person deals cards and the other two payoff and collect bets.

Craps (dice game) dealers work in teams: a box person, a stick person and two dealers. The box person supervises the game, mediates disputes and controls casino chips. The stick person pushes dice to shooters (people who throw dice), retrieves thrown dice and calls the game. The dealers payoff, and move and collect bets, depending on the outcome of the throw.

Poker dealers shuffle and deal cards to players, take the house percentage from the pot and pay winners.

Roulette dealers sell casino chips, spin the roulette wheel, release the ball, and payoff and collect bets. During busy periods, two dealers may work one roulette table.

Working Conditions

There is a great deal of supervision in gaming. Everything is watched and videotaped by surveillance cameras to protect the casino and players from cheating, theft and mistakes.

Most dealers work in pits (groups of tables) and rotate positions to give each dealer a fifteen-minute break every hour. They must remain alert, cheerful and helpful at all times. Many dealers are on their feet all the time except during breaks.

Dealers work shifts. They often work late nights, weekends and holidays, and may work full-time or part-time. Depending on the casino, they may be required to wear specific types of clothing (e.g. tuxedo shirts and pants), casino uniforms or vests.

Although there may be a few non-smoking tables, casinos are generally smoky environments. They also are often crowded and noisy.

Personal Characteristics

Casino dealers need the following characteristics:

- good communication skills in English (or the language in which the casino operates)
- the manual dexterity required to handle cards smoothly
- the ability to count and add quickly and accurately
- the ability to concentrate for long periods of time
- the ability and desire to keep employee, customer and business information confidential
- good problem-solving skills
- good stress-management skills
- the interpersonal skills required to deal effectively with difficult players and those who become angry when they lose.

Craps dealers must be able to keep up an enthusiastic patter during craps games.

All casino dealers should enjoy meeting and serving all kinds of people, and be willing to work under close supervision.

Educational Requirements

Casino dealers must be of legal gambling age and have no criminal record. There are no standard minimum education requirements for casino dealers but employers generally prefer to hire applicants who have a high school diploma. Knowledge of the community and local tourist attractions is an asset.

Dealers must have a complete working knowledge of games, casino rules and security procedures. Most casinos train dealers though in-house training programs. Newly hired dealers are usually given 40 to 60 hours of training over two to six weeks. After they have gained experienced with basic games, dealers may be trained for more advanced games. The number of hours required to train for advanced games varies depending on the game.

Before they are allowed to work in a casino in Alberta, dealers must be registered with the Alberta Gaming and Liquor Commission. Applicants must submit a completed application form, current colour photograph, proof of age and citizenship and a criminal record check.

Other Requirements

In Alberta, casino dealers must renew their registration with the Alberta Gaming and Liquor Commission every two years.

Employment and Advancement

Casino dealers are employed in gambling establishments located in urban centres or on First Nations reserves.

Advancement generally takes the form of learning how to conduct more advanced games or moving into supervisory positions. For example, dealers may start dealing blackjack and later learn other table games such as craps or roulette. Then they may advance to floor supervisor positions, overseeing table games and dealers in a pit. Floor supervisors may become pit managers who ensure that games are run smoothly, schedule dealers' breaks, watch for cheating, mediate disputes, open/close table games and do the associated paper work. Further advancement to management positions may require related post-secondary education.

This occupation is expected to grow as the gambling industry continues to expand in Alberta.

Salary

(section revised OCTOBER 2005)

Hourly wages for casino dealers generally start at or just above minimum wage, and increase with experience and as dealers learn how to conduct more games. Tip money is shared equally among dealers working a shift. On average, dealers receive two to five dollars per hour in tips.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Gambling Casino Workers occupational group working part-time or full-time earned from **$13,100 to $30,300 a year.** The average salary was **$16,100 a year.**

Other Sources of Information

Alberta Gaming and Liquor Commission website: www.aglc.gov.ab.ca

Canadian Tourism Human Resource Council website: www.cthrc.ca

Related Occupational Profiles

Bartender
Tour Guide

Related High School Subjects

Language Arts; Mathematics; Physical Education; and Tourism Studies

Related Post-Secondary Fields of Study

Personal and Food Services

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Casting Director

Produced MAY 2003

Casting directors are hired on contract by film, video, television and advertising companies to find suitable actors to audition for particular parts or characters. Directors or producers have the final say in who is hired for each part.

NOC Number(s): 5226.7
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **D M O**

Duties

Casting directors work closely with performers and film production people. In general, casting directors:

- routinely review performers' promotional materials such as photos, resumes of production credits and industry training, demo reels and voice-over demo CDs
- review scripts, prepare a succinct breakdown of the nature of each role that needs to be cast, describe characteristics and special requirements for each role, and distribute the information to appropriate talent agencies and self-represented performers
- pre-screen candidates to select the most suitable performers for the director and the producer to see
- facilitate the scheduling of callbacks or secondary auditions for those performers the director and/or producer wish to work with further on a particular role
- research organizations, associations or individuals to cast a specific skill or unique talent such as a fire-breathing unicyclist or an Olympic calibre athlete
- negotiate contracts and scheduling between performers or their agents and the production company.

Another area of casting is finding background performers or extras: stand-ins for lead performers, photo-doubles, performers for non-speaking parts and crowd scenes. Scheduling changes for large and small group scenes are not uncommon.

Working Conditions

Travel is often part of auditioning new talent and meeting television and film production people.

Personal Characteristics

Casting directors need the following characteristics:

- the ability to work long hours in a fast-paced environment
- excellent oral and written communication skills
- good interpersonal skills.

They should enjoy compiling information from scripts and signalling cues, taking charge of situations, and negotiating with people.

Educational Requirements

There is **no particular educational route** to enter this field. Casting directors come from diverse backgrounds:

- theatre and film occupations
- business occupations
- public relations.

Interested individuals who have suitable backgrounds may be able to arrange informal apprenticeships with established casting directors. Post-secondary education in the performance arts and contract negotiation skills are definite assets.

For ACTRA jobs, casting directors must be be familiar with the **Alliance of Cinema Television and Radio Artists** Independent Production Agreement for film and television productions and the ACTRA Commercial Agreement for television and radio commercials. These agreements outline standards, including wage minimums and working conditions for Canadian performers of all ages, that must be followed by members of the Canadian Film and Television Producers Association, the Institute of Communications and Advertising, and the Association of Canadian Advertisers.

Other Requirements

Casting directors may belong to professional associations such as:

- Alberta Motion Picture Industry Association
- Casting Directors Society of Canada
- Women in Film and Television - Alberta
- Women in Film and Television - International.

Employment and Advancement

Casting directors are hired on contract for specific projects by:

- film and video production companies
- advertising agencies
- television and radio stations and networks.

Fewer than ten casting directors are employed in Alberta.

Salary

Casting directors negotiate each contract separately. They may negotiate a flat rate or per hourly, daily or weekly wage rate.

Other Sources of Information

Alberta Motion Picture Industry Association website: www.ampia.org

Alliance of Cinema Television and Radio Artists website: www.actra.ca

Cultural Human Resources Council website: www.culturalhrc.ca

Women in Film and Television - International website: www.wift.org

Related Occupational Profiles

Actor
Film Director
Stage Manager
Theatre Director

Related High School Subjects

Communication Technology; Enterprise and Innovation; Financial Management; Fine Arts (Drama); Language Arts; Management and Marketing; and Social Studies

Related Post-Secondary Fields of Study

Business, Management and Administrative Studies; Communications; Fine Arts and Performing Arts; and Humanities and Languages

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Caterer

Produced FEBRUARY 2004

Caterers plan, organize and direct the preparation and service of food and beverages for banquets and other social functions.

NOC Number(s): 0631
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **D M S**

Duties

Caterers may specialize in particular types of functions or food (eg. small business meetings, vegetarian food) or they may cater to a variety of functions and food preferences.

Depending on the size of the operation, caterers may perform all or only some of the following duties:

- discuss requirements with customers and take detailed notes about food and service requirements
- hire chefs, cooks or serving staff if necessary
- develop menus that accommodate any special dietary requirements
- prepare budgets
- purchase supplies
- prepare food or supervise food preparation
- ensure safe food handling practices during preparation, transport and service
- maintain proper liquor controls
- follow up with clients after functions and deal with customer complaints.

They may also:

- co-ordinate arrangements such as room or hall rentals
- set up prior to functions and clean up afterward
- develop work schedules
- supervise food and beverage service during the function.

Self-employed caterers may market their services and manage accounting and other business functions themselves, or hire sales and business managers.

Working Conditions

Self-employed caterers often work long hours including evenings, weekends and holidays until their businesses are well established. They frequently lift and carry items weighing up to 25 kilograms.

Personal Characteristics

Caterers need the following characteristics:

- good communication, supervisory, negotiation and problem-solving skills
- excellent organizational skills
- the ability to work alone or as part of a team
- the ability to remain calm while working in close quarters with others during busy periods
- flexibility and creativity.

They should enjoy:

- co-ordinating information and the activities of others
- setting work schedules, monitoring staff and controlling inventory
- negotiating arrangements with suppliers and clients.

Educational Requirements

(section revised OCTOBER 2005)

Caterers need training and experience related to food preparation or food service. For example, they must be knowledgeable about food safety, liquor codes and fire regulations. Self-employed caterers also need business management knowledge and skills. For information about related post-secondary programs, see the Banquet Manager, Chef and Cook occupational profiles.

Alberta Tourism Education Council (ATEC) has developed occupational standards for Catering Functions Supervisors and Catering Functions Managers. ATEC standards define the knowledge and skills necessary to be a competent professional.

Employment and Advancement

(section revised JANUARY 2006)

Caterers may be self-employed or employed by large catering firms, hotels or convention facilities. Advancement in this occupation generally takes the form of moving to more responsible positions or building a bigger business.

Caterers are part of the larger National Occupational Classification 0631: Restaurant and Food Service Managers. In Alberta, most people employed in this classification work in the **Accommodation and Food Services** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Accommodation and Food Services industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 13,800 Albertans are employed in the Restaurant and Food Service Managers occupational group which is expected to grow 1.5 to 2.5 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 200 to 350 **new** positions will be created each year **in addition** to job openings created by employment turnover.(**Note**: Since caterers form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for caterers.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised SEPTEMBER 2005)

Self-employed caterers should expect to make very little in their first year of operation. However, successful catering businesses can be very profitable.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Restaurant and Food Service Managers occupational group working part-time or full-time earned from **$13,000 to $179,900 a year.** The average salary was **$30,900 a year.**

Other Sources of Information

(section revised OCTOBER 2005)

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Restaurant and Foodservices Association website: www.arfa.net

Alberta Tourism Education Council (ATEC) website: www.atec.ca

Related Occupational Profiles

Banquet Manager
Chef
Cook
Food Service Supervisor
Restaurant Manager
Special Event Co-ordinator

Related High School Subjects

Enterprise and Innovation; Financial Management; Foods; Language Arts; Legal Studies; Logistics; Management and Marketing; Mathematics; Physical Education; Science (Biology); and Tourism Studies

Related Post-Secondary Fields of Study

Business, Management and Administrative Studies; Human Ecology, Fashion and Food Sciences; and Personal and Food Services

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Chauffeur

Produced OCTOBER 2003

Chauffeurs drive limousines and large sedans to transport passengers, ranging from corporate executives to children, from place to place.

NOC Number(s): 7413.2
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: O M S

Duties

Chauffeurs may work exclusively for specific organizations or individuals, or work for companies that provide limousine services for special occasions such as business meetings, weddings, graduations, concerts and formal parties.

The primary responsibility of all chauffeurs is to operate passenger vehicles safely and efficiently. However, they also:

- pick-up or meet passengers in response to dispatched calls or pre-arranged bookings
- help passengers board and leave limousines
- provide information about the local area
- collect payments from customers
- keep their limousines clean inside and out
- perform routine maintenance checks on their vehicles (e.g. check tires, fluid levels).

Working Conditions

Chauffeurs may work on-call and only on a part-time basis, or they may drive full-time exclusively for one employer. They spend most of their work time either driving or waiting for passengers. Chauffeurs often work nights and on weekends, and sometimes work shifts. They are usually required to wear suits or uniforms.

Lifting luggage and parcels weighing up to 25 kilograms, and occasionally in excess of 25 kilograms, may be required.

Personal Characteristics

Chauffeurs need the following characteristics:

- good communication skills
- the ability to remain diplomatic and courteous, even when dealing with difficult passengers
- a desire to maintain a neat personal appearance and keep their vehicles clean
- patience and self-discipline.

They should enjoy driving, taking a methodical approach to cleaning and servicing vehicles, and talking to people.

Educational Requirements

In Alberta, chauffeurs must have a **Class 4 Alberta Operator's License** which requires a medical examination and successful completion of a written exam and a road test. Depending on the municipality in which they work, chauffeurs may also be required to have a municipal chauffeur's permit. The municipal permit may require successful completion of an English exam and a test of the applicant's knowledge of the city, or a police abstract indicating that the applicant has no criminal convictions. Demerit points and moving convictions are monitored by municipalities and employing companies. Often, companies will not allow drivers to work if there are more than six demerit points on their records.

In general, employers prefer to hire job applicants who:

- have good driving records
- have strong personal and work references
- know the local area and house numbering systems, and the locations of important buildings, landmarks and

popular restaurants and bars
- can describe local points of interest.

Some limousine companies require their chauffeurs to be 25 years of age or older so they qualify for lower insurance rates.

Employment and Advancement

(section revised JANUARY 2006)

Most chauffeurs work for limousine or cab companies but some work for individual employers or are self-employed. There are usually opportunities for part-time, on-call work with limousine companies for chauffeurs who have good driving records.

Chauffeurs are part of the much larger National Occupational Classification 7413: Taxi and Limousine Drivers and Chauffeurs. In Alberta, most people employed in this classification work in the **Transportation and Warehousing** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:
- trends and **events** affecting overall employment (especially in the Transportation and Warehousing industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

About 4,650 Albertans are employed in the Taxi and Limousine Drivers and Chauffeurs occupational group which is expected to grow 1.5 to 2.5 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 60 to 120 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since chauffeurs form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for chauffeurs.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Chauffeurs' earnings vary considerably, depending on the employer and the number of hours worked. Chauffeurs may be paid by the hour, a percentage of the amount charged to customers or a monthly salary. They may be required to purchase expensive uniforms.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Taxi and Limousine Drivers and Chauffeurs occupational group working part-time or full-time earned from **$12,600 to $42,600 a year.** The average salary was **$19,700 a year.**

Related Occupational Profiles

Bus Driver
Driving Instructor
Taxi Driver
Truck Driver

Related High School Subjects

Language Arts; Physical Education; and Tourism Studies

Related Post-Secondary Fields of Study

Driver Training

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Chef

Produced MARCH 2003

Chefs are managers who plan, direct and participate in food preparation and cooking activities in restaurants, hotels, institutions and other food establishments.

NOC Number(s): 6241.1
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **D M I**

Duties

Chefs' duties and responsibilities vary from organization to organization but, in general, they:

- supervise cooks and other kitchen staff in the preparation, cooking and presentation of food,
- order food and kitchen supplies based on best price and budget
- check orders received for quantity and quality of product
- create new recipes to please customers
- hire and supervise kitchen staff
- create menus
- estimate labour and food costs and modify menus to stay within budget
- check the quality of raw and cooked food products
- ensure that sanitation standards are maintained
- assist with staff development and training
- meet with other managers in the organization
- promote their establishments by practicing good public relations.

Where there are a number of cooks working for the same employer, they usually specialize in the preparation of particular types of foods. For example, they may be:

- **chefs saucier** who prepare, season and cook sauces and the meat and fish items they accompany, and prepare soups, casseroles and related dishes
- **chefs garde manger** who prepare and present salads, cold dishes and cold hors d'oeuvres and buffets
- **chefs entremetier** who prepare, cook and present vegetables, pasta and egg dishes
- **chefs patissier** who prepare, cook and present desserts and pastries and may also prepare ice creams and sherbets.

Working Conditions

Working conditions for chefs vary with the type of organization. Large establishments may have modern equipment, well-lighted work areas and air-conditioning. Older and smaller establishments may not be as well equipped.

Chefs frequently work in close quarters that can be very noisy, especially during busy periods. They must stand for hours at a time and work near hot ovens and grills. Some lifting up to 10 kilograms may be routinely required.

Work hours vary depending on the type and size of the establishment. Large establishments which are open 24 hours a day typically have two to three shifts a day. Holiday, weekend work and overtime is common.

Personal Characteristics

Chefs need the following characteristics:

- good health and stamina
- a keen sense of taste and smell
- excellent hand-eye co-ordination
- good arithmetic skills

- a good memory for details
- artistic and creative talent
- excellent communication skills, interpersonal skills and team-building skills
- the ability to remain calm in hectic circumstances
- excellent organizational skills.

The should enjoy planning and organizing menus and methods, supervising the work of others, and using tools and equipment to perform tasks requiring precision.

Educational Requirements

(section revised NOVEMBER 2004)

Almost all chefs have some technical qualification obtained through **apprenticeship** training or related post-secondary education.

Alberta has a formal apprenticeship program for cooks (for more information, see the Cook occupational profile). Outside of the apprenticeship program, the following post-secondary institutions offer related training programs:

- **Lethbridge Community College** offers a Culinary Careers program. The entrance requirement is 65 high school credits with at least 60 per cent in English 23 and Math 23 or equivalent. Applicants are required to complete a personal medical profile and update their immunization record prior to entering the program.
- The **Northern Alberta Institute of Technology (NAIT)** in Edmonton offers one year certificate and two year diploma programs in Culinary Arts. The minimum entrance requirement is Grade 10 or equivalent including English and math. However, an average of 65 per cent in Grade 12 English and math may be required to gain admission to this quota program.
- **Portage College** in Lac La Biche offers a 33-week Cooking certificate program. The entrance requirement is Grade 10 or equivalent with English 10 or 13 and Math 10 or 13, Pure Math 10 or Applied Math 10.
  Portage College also offers a 16-week Culinary Arts certificate program. The entrance requirement is Grade 9 or equivalent. All students in this program are eligible for student membership in the Canadian Federation of Chefs and Cooks (CFCC).
- The **Southern Alberta Institute of Technology (SAIT)** in Calgary offers a Professional Cooking program. The Professional Cooking program has three, 16-week semesters and an eight week work experience term between the second and third semesters. The entrance requirement is at least 35 high school credits (Grade 10) with Grade 10 math and English 10 or 13 or Humanities 10.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

In addition to technical training, chefs usually require three to six years of experience in commercial food preparation. Chefs who have international reputations have usually apprenticed under masters at famous restaurants in some of the major cities around the world.

The **Canadian Federation of Chefs and Cooks** and the Canadian Culinary Institute, in conjunction with learning institutions in various locations, offer a five-course continuing education program leading to the designation Certified Chef de Cuisine. Applicants must have at least five years of industry experience including two years of experience in a supervisory position after achieving Red Seal certification (for more information, see the Cook occupational profile).

Employment and Advancement

(section revised JANUARY 2006)

Most chefs are employed in privately owned restaurants or hotels, but some are employed by:

- educational institutions
- hospitals
- nursing and personal care facilities
- civic and social organizations
- catering companies
- railways and cruise lines.

Experienced chefs may advance to sous-chef and executive chef positions, or purchase and manage their own establishments. Opportunities for advancement depend largely on acquiring better cooking and management skills. Graduates of technical or apprenticeship programs tend to advance more quickly than those who do not have formal qualifications.

In Alberta, over 75 per cent of people employed as chefs work in the **Accommodation and Food Services** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Accommodation and Food Services industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation**.

Over 3,400 Albertans are employed in the Chefs occupational group which is expected to grow 1.3 to 2.3 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 40 to 80 **new** positions will be created each year **in addition** to job openings created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Salaries for chefs vary a great deal, depending on the size and location of the establishment, volume of business and the chef's reputation.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Chefs occupational group working part-time or full-time earned from **$12,300 to $109,900 a year.** The average salary was **$31,000 a year.**

Most chefs earn from **$21,000 to $50,000 per year (2003 estimate).**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Hotel and Lodging Association website: www.albertahotels.ab.ca

Canadian Federation of Chefs and Cooks website: www.cfcc.ca

Related Occupational Profiles

Baker
Banquet Manager
Caterer
Cook

Related High School Subjects

Financial Management; Foods; Language Arts; Management and Marketing; Mathematics; Physical Education; and Tourism Studies

Related Post-Secondary Fields of Study

Personal and Food Services

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Chemical Engineer

Produced JUNE 2004

Chemical engineers develop processes, design equipment and provide technical and management services for plants that convert raw materials into a wide range of end products (e.g. chemicals, pharmaceuticals, food products, fuels, plastics, metals).

NOC Number(s): 2134
Minimum Education: 4 years post-secondary education/training
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: **I O D**

Duties

In research laboratories, chemists, biochemists and materials scientists develop metal and chemical products (e.g. drugs, detergents, fertilizers, plastics, fuels, fabrics) and engineers develop the processes required to produce them commercially. Chemical engineers adapt the small-scale production and processes used in the laboratory to large-scale, commercial and industrial production.

In general, chemical engineers:

- design, maintain and manage chemical, biochemical, pharmaceutical and materials processing plants
- trouble-shoot problems in industrial processing plants
- ensure efficient, safe and environmentally responsible plant operations
- supervise technologists, technicians and other engineers engaged in support activities
- choose the best instruments for measuring pressure, temperature, flow rate, composition, etc.
- design and operate quality and environmental control systems
- advise management regarding the layout of industrial plants and the installation and sizing of equipment
- determine the most effective processes for commercial production
- conduct economic evaluations of projects to find the most cost effective options
- design and develop new and better processes and equipment for converting raw materials into products
- use computers to simulate, model and control processes.

Chemical engineers may work in one or more of the following areas.

- In **research and development,** chemical engineers conduct experiments to develop new products and processes. They usually work with a team of scientists (e.g. chemists, metallurgists, biochemists, material scientists, physicists) and engineers (e.g. mechanical, metallurgical, electrical engineers).
- In **process design,** chemical engineers use existing data and design methods to design equipment and operating specifications for industrial plants. Cost, safety and environmental concerns are vital components of plant design. Chemical engineers working in this phase often work with financial experts, technologists and engineers from other disciplines.
- In **plant operations,** chemical engineers ensure that the equipment in their unit operates efficiently and safely, and that the desired quantity and quality of product is produced. This includes trouble-shooting, process improvement and equipment modification. They work with technologists, operators and other engineers and usually report to production managers.

Working Conditions

Chemical engineers work in office, industrial plant and laboratory environments. Those who work in production may come in contact with hazardous machinery and chemicals on a regular basis, or be required to climb process equipment up to ten stories high. Lifting up to 25 kilograms may be required.

Chemical engineers may be "on-call" after hours. The work can be stressful when processes do not work as planned.

Personal Characteristics

Chemical engineers need the following characteristics:

- the ability to think analytically and solve problems
- an aptitude for physics, mathematics and chemistry
- the ability to visualize complex processes and equipment
- good oral and written communication skills
- an interest in and an aptitude for management
- a willingness to improve their knowledge and skills on an ongoing basis
- the ability to work effectively in teams with people from various disciplines and educational backgrounds.

They should enjoy being innovative, doing precise work, making decisions and directing the work of others.

Educational Requirements

The minimum education requirement for chemical engineers is a **bachelor's degree in chemical engineering.** A graduate degree is usually required for research or university teaching positions.

Programs leading to a bachelor of science (B.Sc.) degree in chemical engineering, as well as master's and doctoral degrees in chemical engineering, are offered at the **University of Alberta** in Edmonton and the **University of Calgary**. The admission requirement for the four year bachelor's degree programs is a high school diploma with an overall average of at least 78 or 80 per cent in English 30, Pure Math 30, Math 31, Chemistry 30 and Physics 30.

Industry work experience prior to graduation is recommended. A co-operative education or internship program, consisting of periods of academic study alternating with periods of planned work experience in industry, is available through the Faculties of Engineering at both the University of Alberta and the University of Calgary. The co-operative engineering degree program usually requires five years to complete.

Post-secondary institutions throughout the province offer university transfer programs that allow students to apply up to two years of study to university bachelor's degree programs. It is the student's responsibility to ensure that the courses they choose to take will be accepted for credit at the institution to which they wish to transfer.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Other Requirements

(section revised OCTOBER 2004)

Under Alberta's Engineering, Geological and Geophysical Professions Act, you must be a registered member of the Association of Professional Engineers, Geologists and Geophysicists of Alberta (APEGGA) to practice as a Professional Engineer. You do **not** have to be registered if you work under the direct supervision of a Professional Engineer and do not call yourself a Professional Engineer.

Employment and Advancement

(section revised JANUARY 2006)

Chemical engineers work wherever there is a process of conversion (e.g. in pulp and paper manufacturing, petroleum refining, oil sands extraction, energy conversion, polymer processing, metal extraction and refining, power generation, food processing, adhesives and coatings production). Some chemical engineers are employed by instrumentation and control companies, engineering design companies and environmental companies and agencies. A growing number work in the field of nanotechnology (dealing with objects less than 100 nanometres in length) on applications ranging from developing new materials to creating new medical devices.

A typical first job after graduation is in process development. In these initial positions, junior engineers usually work on diverse assignments under the supervision of more senior engineers to gain experience and learn company procedures. With experience, chemical engineers may progress from production management positions responsible for a single unit or product to operations management positions responsible for large industrial complexes. Some become chief executive officers.

In Alberta, over 75 per cent of people employed as chemical engineers work in the following industries:

- **Professional and Technical Services**

- **Oil and Gas Extraction**
- **Petrochemicals, Rubber, Plastics and Chemicals Manufacturing**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 1,850 Albertans are employed in the Chemical Engineers occupational group which is expected to grow 2.5 to 3.5 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 40 to 70 **new** positions will be created each year **in addition** to job openings created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised SEPTEMBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Chemical Engineers occupational group working part-time or full-time earned from **$47,700 to $132,900 a year.** The average salary was **$92,000 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Association of Professional Engineers, Geologists and Geophysicists of Alberta (APEGGA) website: www.apegga.org

Canadian Society for Chemical Engineering (CSChE) website: www.chemeng.ca

Chemical Institute of Canada (CIC) website: www.cheminst.ca

American Institute for Chemical Engineering (AIChE) website: www.aiche.org

Related Occupational Profiles

Chemical Engineering Technologist
Chemist
Environmental Auditor
Environmental Engineer
Instrument Technician
Instrumentation Engineering Technologist
Petroleum Engineer

Related High School Subjects

Information Processing; Language Arts; Mathematics; and Science (Chemistry; and Physics)

Related Post-Secondary Fields of Study

Engineering, Architecture and Related Studies

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

The information contained in this profile was current as of the dates shown. **Salaries, employment outlook** and **educational programs** may change. Please check the information before making any career decisions.

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Chemical Engineering Technologist

Produced JULY 2004

Chemical engineering technologists are involved in process design, plant engineering, environmental control, engineering sales and plant operations. They may work independently or in an engineering team.

NOC Number(s): 2211.1
Minimum Education: 2 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **O I M**

Duties

Chemical engineering technologists may work in engineering offices, sales offices or production facilities.

In engineering offices, they may work on process engineering, operation engineering, production engineering or project co-ordination. In general, they:

- run computer-based process simulations
- provide technical engineering support
- trouble-shoot problems and optimize operations
- prepare engineering drawings
- evaluate and prepare regulatory applications
- redesign process equipment.

In technical sales offices, chemical engineering technologists:

- act as liaisons between plant engineering personnel and equipment suppliers
- prepare quotes and technical documents
- co-ordinate projects.

In production facilities, they:

- operate process control equipment
- gather plant operating data for design purposes
- do feasibility studies
- co-ordinate production
- supervise construction activity.

Chemical engineering technologists may also:

- do environmental impact assessments and environmental audits, decommission facilities and do site reclamation work
- prepare cost estimates and construction schedules for production factilites
- assist in the design of new processes and production plants
- evaluate the economic and technical feasibility of modifying, replacing or installing new plant equipment
- trouble-shoot and solve problems to maximize production
- prepare process and instrument drawings
- design and implement corrosion management programs for pressure vessels and pipelines
- operate complex plants and processes, and make process improvements.

Chemical engineering technologists use scientific principles to solve technical problems in a safe and cost effective manner. They may work in design or operate small scale models of equipment (prototypes) created to design or evaluate manufacturing processes or equipment.

Working Conditions

Chemical engineering technologists may work in office environments or industrial plant facilities. In production environments, they may work shifts.

Personal Characteristics

Chemical engineering technologists need the following characteristics:

- the ability to pay attention to details
- persistence and a desire to be accurate
- strong problem-solving skills
- the communication and interpersonal skills required to work in a team environment and possibly supervise others.

They should enjoy working with people, analyzing data and performing calculations to solve problems, and taking a methodical approach to their work.

Educational Requirements

The minimum educational requirement for working as a chemical engineering technologist is a related **two year diploma of technology**.

- **Northern Alberta Institute of Technology (NAIT)** in Edmonton offers a two year Chemical Engineering Technology diploma program. The minimum admission requirement is a high school diploma or equivalent with English 30 or 33, Pure Math 30 or Math 30 (or at least 60 per cent in Math 33), and one of: Science 30, Physics 30 or Chemistry 30. Normal colour vision is an asset. Applicants presenting Applied Math 30 will be assessed and upgrading may be required.
- **Southern Alberta Institute of Technology (SAIT)** in Calgary offers a two year Chemical Engineering Technology diploma program. The minimum admission requirement is a high school diploma or equivalent with English 30 or 33, Pure Math 30 or Math 30, Chemistry 30, and either Physics 20 or Science 30 or completion of the Pre-Careers program at SAIT.

Graduates from both programs may be given two years of credit toward the Bachelor of Applied Petroleum Engineering Technology program offered by SAIT.

Keyano College in Fort McMurray offers a one year transfer program for the Chemical Engineering Technology program at SAIT. The entrance requirement is a high school diploma with English 30 or 30-1, Math 30 or Pure Math 30, Physics 30 and Chemistry 30.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Other Requirements

(section revised OCTOBER 2004)

Certification with the Alberta Society of Engineering Technologists (ASET) is voluntary.

Under Alberta's Engineering, Geological and Geophysical Professions Act, Registered Professional Technologists - Engineering must be ASET members to engage in a defined scope of engineering practice as registered by the Association of Professional Engineers, Geologists and Geophysicists of Alberta (APEGGA).

Employment and Advancement

(section revised JANUARY 2006)

Chemical engineering technologists are usually members of operating teams that include engineers, other technologists and technicians involved in the operation of industrial plants, mills and refineries. They may also work in environmental consulting, chemical or equipment sales, or as chemical process operators.

Typical employers include:

- tar sand and heavy oil extraction plants
- chemical, fertilizer and petrochemical production facilities
- oil and gas plants
- food processing companies
- pulp and paper companies
- technical sales organizations

- environmental engineering firms
- service and consulting firms.

Experienced chemical engineering technologists may advance to senior technical supervisor or staff supervisor positions. Some chemical engineering technologists take additional training and teach in technical institutes. Others work as technical writers or as salespersons for chemical products.

Chemical engineering technologists are part of the much larger National Occupational Classification 2211: Chemical Technologists and Technicians. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Petrochemicals, Rubber, Plastics and Chemicals Manufacturing**
- **Professional and Technical Services**
- **Oil and Gas Extraction**
- **Public Administration**
- **Food and Beverage Products Manufacturing**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 2,150 Albertans are employed in the Chemical Technologists and Technicians occupational group which is expected to grow 1.6 to 2.6 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 30 to 60 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since chemical engineering technologists form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for chemical engineering technologists.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised SEPTEMBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Chemical Technologists and Technicians occupational group working part-time or full-time earned from **$23,500 to $89,300 a year.** The average salary was **$53,600 a year.**

For more detailed information, see ASET's Annual Salary Surveys.

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Society of Engineering Technologists (ASET) website: www.aset.ab.ca

Related Occupational Profiles

Chemical Engineer
Chemical Technologist
Industrial Engineering Technologist
Petroleum Engineering Technologist
Pollution Control Technologist
Water and Wastewater Treatment Plant Operator

Related High School Subjects

Information Processing; Language Arts; Mathematics; and Science (Chemistry; and Physics)

Related Post-Secondary Fields of Study

Engineering and Science Technologies

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Chemical Technologist

Produced JUNE 2004

Chemical technologists may work independently or with a team of chemists, chemical engineers and related professionals involved in quality control testing, product research and development, or environmental analysis.

NOC Number(s): 2211.1
Minimum Education: 2 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **O I M**

Duties

Chemical technologists acquire, install, maintain and operate analytical equipment and technical instruments such as those required for environmental analysis. They may also conduct experiments on products being developed or improved.

Duties and responsibilities vary from one position to another but, in general, chemical technologists:

- carry out chemical reactions
- prepare standards and samples
- analyze samples using bench methods and sophisticated instrumentation
- prepare reports and required documentation
- maintain and upgrade laboratory instruments and equipment
- manage projects and make presentations about results.

Working Conditions

Chemical technologists may work alone or in teams. They are usually employed in industrial plants or laboratories and may be required to work shifts. They often work with hazardous substances and must observe appropriate safety precautions.

Personal Characteristics

Chemical technologists need the following characteristics:

- strong analytical skills
- an aptitude for science and mathematics
- good colour vision
- manual dexterity
- strong oral and written communication skills
- the ability to pay close attention to details.

They should enjoy using instruments and equipment to perform tasks requiring precision, analyzing data and supervising the work of technicians and others.

Educational Requirements

The minimum educational requirement for chemical technologists is **a two year chemical technology diploma**.

In Alberta, the following institutions offer two year programs in Chemical Technology:

- The **Northern Alberta Institute of Technology (NAIT)** in Edmonton. The entrance requirement is a high school diploma or equivalent with English 30 or 33, Pure or Applied Math 30, and Chemistry 30, or completion of the Pre-Technology (Stream Two) program at NAIT.
- The **Southern Alberta Institute of Technology (SAIT)** in Calgary offers a two year Chemical Technology diploma program. The entrance requirement is a high school diploma or equivalent with at least 50 per cent in English 30 or 33, Pure Math 30 or Math 30, and Chemistry 30.

These are quota programs so admission is competitive.

Both NAIT and SAIT have co-op options where the student works in a paid laboratory position from four months to a year, sometime before their last semester.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Other Requirements

Certification is voluntary.

The Alberta Society of Engineering Technologists (ASET) offers certification for graduates of recognized education programs who have two years of successful experience in industry.

Employment and Advancement

(section revised JANUARY 2006)

Chemical technologists usually work in:

- the chemical, petro-chemical, mining, metallurgical, agricultural, biotechnology, pharmaceutical or food industries
- research institutes
- government health or environmental control agencies.

Advancement opportunities vary depending on the size and nature of the organization and the individual's qualifications. Experienced chemical technologists may move into sales or management positions, or own and operate their own laboratories.

Chemical technologists are part of the much larger National Occupational Classification 2211: Chemical Technologists and Technicians. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Petrochemicals, Rubber, Plastics and Chemicals Manufacturing**
- **Professional and Technical Services**
- **Oil and Gas Extraction**
- **Public Administration**
- **Food and Beverage Products Manufacturing**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 2,150 Albertans are employed in the Chemical Technologists and Technicians occupational group which is expected to grow 1.6 to 2.6 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 30 to 60 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since chemical technologists form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for chemical technologists.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised SEPTEMBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Chemical Technologists and Technicians occupational group working part-time or full-time earned from **$23,500 to $89,300 a year.** The average salary was **$53,600 a year.**

For more detailed information, see ASET's Annual Salary Surveys.

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Society of Engineering Technologists (ASET) website: www.aset.ab.ca

Canadian Society for Chemical Technology (CSCT) website: www.cheminst.ca

Chemical Institute of Canada (CIC) website: www.cheminst.ca

Related Occupational Profiles

Chemical Engineering Technologist
Food Science Technologist
Forensic Laboratory Analyst
Pollution Control Technologist
Water and Wastewater Treatment Plant Operator

Related High School Subjects

Agriculture; Energy and Mines; Foods; Forestry; Language Arts; Mathematics; Science (Chemistry); and Wildlife

Related Post-Secondary Fields of Study

Engineering and Science Technologies

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Chemist

Produced JULY 2004

Chemists conduct research and develop new or improved products and processes, and test and evaluate their quality and safety.

NOC Number(s): 2112
Minimum Education: 4 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **I O D**

Duties

Chemists study atoms and molecules and how they interact with and impact their surroundings. Their knowledge of molecular structure and properties, transformations and interactions may be applied in fields ranging from the development of consumer products (e.g. fuels, plastics, drugs, foods) to field production in the oil and gas industry. They may be primarily involved in:

- analysis (soil, water, air, forensic, toxicological, environmental, food production, waste analysis, pollution control, corrosion control, etc.)
- quality control
- research and development (e.g. new materials for chemical, pharmaceutical, electronics, defence, metals or food production).

Chemists usually specialize in a particular area such as:

- analyzing the components of solid, liquid or gas mixtures
- developing analystical instrumentation and related analytical methods
- studying the physical characteristics of matter to better understand the fundamental principles of chemical structure and behaviour
- studying carbon-based compounds (organic chemistry) or those that are not carbon-based (inorganic chemistry)
- studying the chemistry of living things (for more information, see the Biochemist occupational profile)
- working with polymers (plastics, rubber and synthetic fibres) and developing related materials (e.g. catalysts, coatings, resins, fabrics)
- guiding research by eliminating non-feasible options and highlighting those with the best chance of success.

Working Conditions

Chemists often work in research and development teams. They work variable hours in offices, laboratories and classrooms. Those employed in research facilities, industrial plants or hospitals may be required to work shifts.

Chemists must understand and observe safety precautions to avoid injury when handling hazardous substances.

Personal Characteristics

Chemists need the following characteristics:

- good speaking, reading and writing skills
- mathematical ability
- problem-solving skills
- the ability to work independently as well as with a team
- patience, persistence and the ability to pay attention to detail.

They should enjoy synthesizing information and finding innovative solutions to problems, working with instruments at tasks requiring precision and directing the work of others.

Educational Requirements

(section revised JULY 2005)

Most chemists begin their post-secondary education by taking a four year Bachelor of Science (B.Sc.) degree in chemistry. Those who want to specialize further or carry out research usually continue their education to the master's (M.Sc.) or doctoral (PhD) level. In general, the entrance requirement for a master's degree program in chemistry is an acceptable average in a **four year B.Sc. degree program in chemistry (or equivalent)**. A PhD is often required for research and post-secondary teaching positions.

In Alberta, the following post-secondary institutions offer **four year** degree programs in chemistry.

- **Concordia University College of Alberta** in Edmonton offers a four year B.Sc. degree program. The entrance requirement is an average of at least 60 per cent in English 30, Pure Math 30, Chemistry 30 and two other appropriate Grade 12 subjects (including an appropriate science subject).
- **The King's University College** in Edmonton offers a four year B.Sc. degree program. The entrance requirements is an average of at least 60 per cent in English 30, Chemistry 30, Pure Math 30 and two other appropriate Grade 12 subjects.
- The **University of Alberta** in Edmonton offers four year B.Sc. degree programs. The entrance requirement is an average of 65 to 80 per cent in English 30, Pure Math 30, Chemistry 30, Physics 30 and one other appropriate Grade 12 science (Math 31 recommended). The University of Alberta also offers and industrial internship for B.Sc. Honors or Specialization students, and programs leading to master's (M.Sc.) and doctoral (PhD) degrees in chemistry. The University of Alberta in Camrose also offers bachelor degree programs in chemistry.
- The **University of Calgary** offers a four year B.Sc. degree program in chemistry and five year co-operative education B.Sc. degree program in applied chemistry. The applied chemistry program includes work experience in a university, industrial or government laboratory. The entrance requirement is an average of at least 70 per cent in English 30, Pure Math 30, Chemistry 30, one of: Biology 30, Physics 30 or Math 31, and one other appropriate Grade 12 subject. Math 31 and Physics 30 are recommended. The University of Calgary also offers programs leading to master's (M.Sc.) and doctoral (PhD) degrees in chemistry.
- The **University of Lethbridge** offers four year degree programs in chemistry. The entrance requirement is an average of at least 65 per cent (68 per cent will be required in the Fall of 2005) in English 30, Pure Math 30, Chemistry 30, Physics 30 and one other Grade 12 subject (Math 31 recommended). The University of Lethbridge also offers a program leading to a master's degree in chemistry.

Post-secondary institutions throughout the province offer university transfer programs that allow students to apply up to two years of study toward university bachelor's degree programs. It is the student's responsibility to ensure that the courses they choose to take will be accepted for credit at the institution to which they wish to transfer.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Other Requirements

(section revised OCTOBER 2004)

Professional Chemist is a protected title under Alberta's Professional and Occupational Associations Registration Act. This means that to call yourself a Professional Chemist, you must be a registered member of the Association of the Chemical Profession of Alberta (ACPA). You do **not** have to be registered if you do not call yourself a Professional Chemist.

Employment and Advancement

(section revised JANUARY 2006)

Chemists are employed in medical, industrial, government, academic and agricultural laboratories. Some chemists work as marketing or sales representatives or as consultants, and some start their own consulting and service businesses. Those who have a Bachelor of Education (B.Ed.) degree may teach chemistry at the high school level.

Experienced chemists may advance to senior management positions. Completion of an additional degree is often required to move into fields such as environmental law or business.

In Alberta, over 75 per cent of people employed as chemists work in the following industries:

- **Petrochemicals, Rubber, Plastics and Chemicals Manufacturing**
- **Health Care and Social Assistance**

- **Professional and Technical Services**
- **Public Administration**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 1,050 Albertans are employed in the Chemists occupational group which is expected to grow 1.1 to 2.1 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 10 to 30 **new** positions will be created each year **in addition** to job openings created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised SEPTEMBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans working part-time or full-time in the Chemists occupational group earned **up to $104,400 a year**. Those with three years of experience earned from **$61,400 to $95,000 a year.** The average salary was **$83,900 a year**.

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Association of the Chemical Profession of Alberta (ACPA) website: www.pchem.ca

Chemical Institute of Canada (CIC) website: www.cheminst.ca

CIC Calgary Section website: www.chem.ucalgary.ca/cic/

CIC Edmonton Section website: www.cicedmonton.org

Related Occupational Profiles

Biochemist
Chemical Engineer
Environmental Auditor
Environmental Education Specialist
Environmental Engineer
Food Scientist
Forensic Laboratory Analyst
Hazardous Waste Management Technologist
Pharmacologist
Soil Scientist
Toxicologist

Related High School Subjects

Agriculture; Energy and Mines; Foods; Forestry; Language Arts; Mathematics; Science (Chemistry); and Wildlife

Related Post-Secondary Fields of Study

Sciences

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Child and Youth Care Worker

Produced NOVEMBER 2005

Child and youth care workers work to improve the physical, emotional, intellectual and social development of vulnerable children and adolescents.

NOC Number(s): 4212
Minimum Education: 1 year post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: S M I

Duties

Child and youth care workers may work with young people who are:

- temporarily housed in government or private homes, agencies, treatment centres or group homes
- involved in community youth programs, family support or foster care programs, or school based programs.

In general, child and youth care workers:

- establish trusting and meaningful one-to-one relationships with children and adolescents
- implement strategies such as planned daily activities, co-ordinated treatment interventions, structured environments, and organized recreational and social activities
- help youth identify personal strengths and resources for positive change
- help develop and maintain individual and group treatment programs
- help control acts of aggression and depressive, destructive or self-injurious behaviours
- act as a resource for clients and their families
- handle behaviour management, safety and security programming for young people in residential centres
- write progress reports about their clients.

Child and youth care workers often work as part of a team of social workers, psychologists, recreation therapists, foster care workers, teachers and other professionals. They help integrate the efforts of all these specialized professionals with children and adolescent youth who may be experiencing emotional or behavioural challenges. Due to their on-going close involvement with clients, child and youth care workers are in an ideal position to help children learn to be advocates for themselves and to take responsibility for their actions.

The number of children assigned to each worker varies depending on the needs of each child and the type of service being offered. The average is one worker for three to five children.

Working Conditions

Child and youth care workers may be required to work shifts (days, evenings and sometimes nights, seven days a week). The work can be physically and mentally demanding, and may require restraining young people.

Personal Characteristics

Child and youth care workers need the following characteristics:

- excellent written and oral communication skills
- decision-making and problem-solving skills
- the desire, ability and maturity required to engage in intense relationships with young people
- the ability to be reliable and consistent
- the flexibility and creativity required to adopt new ways to do things
- the ability to work in a team environment with children, families and other professionals.

They should enjoy working with young people, keeping in touch with others involved in helping their clients, and finding innovative solutions to problems.

Educational Requirements

(section revised DECEMBER 2005)

Child and youth care workers must be familiar with the development, and educational, emotional, social and recreational needs of young people. Employers generally prefer to hire applicants who have related post-secondary education, preferably a diploma or degree in child and youth care or a related social science degree. Previous work experience with young people is a definite asset. In some settings, knowledge of native culture and language may be required.

Three year and four year Bachelor of Arts (BA) degree programs in social sciences are offered by post-secondary institutions throughout Alberta. The following institutions offer programs that are specifically related to child and youth care:

- **College Columbia**, a private vocational school in Calgary, offers Human Service Professional program which may be taken full-time (25 weeks) or part-time (50 weeks). The entrance requirement is a high school diploma with a 60 per cent average, or equivalent.
- **Gardner College - A Centre for Christian Studies** in Camrose offers a two year Child and Youth Care Worker diploma program. The entrance requirement is a high school diploma or equivalent.
- **Grant MacEwan College** in Edmonton offers a two year Child and Youth Care diploma program which may be taken full-time or part-time (evenings or by distance self-study). Applicants must be at least 19 years of age and have a high school diploma or equivalent. In September 2006, the College plans to offer a four year Bachelor of Child and Youth Care degree program.
- **Keyano College** offers one year certificate and two year diploma programs in Aboriginal Child and Family Services in Edmonton. The first year of the program also is available in WEB CT format through eCampus Alberta. The entrance requirement is a high school diploma with English Language Arts 30-1 or English 30 (or 65 per cent in ELA 30-2 or English 33), or equivalent.
- **Lakeland College** in Vermilion offers a two year Child and Youth Care diploma program. The entrance requirement is a high school diploma with at least a 65 per cent in English Language Arts 30-1 or English 30 (or 80 per cent in ELA 30-2 or English 33). Applicants must be in good health, highly motivated, emotionally mature and stable.
- **Lethbridge Community College** offers a two year Child and Youth Care diploma program. The entrance requirement is a high school diploma with at least a 60 per cent in English Language Arts 30-1 or English 30 (or 70 per cent in ELA 30-2 or English 33), Social Studies 30 (or 70 per cent in Social Studies 33) and one other 30 level course, or equivalent. The College also offers a 22 week Fetal Alcohol Spectrum Disorder Support Worker program.
- **Medicine Hat College** offers a two year Child and Youth Care diploma program. The entrance requirement is a high school diploma with English Language Arts 30-1 or 30-2 (or English 30 or 33), one 30 or 31 level subject, and three other 30, 31 or 33 level subjects or CTS course.
- **Mount Royal College** in Calgary offers a two year Child and Youth Care Counselor diploma program. The entrance requirement is a minimum of 19 years of age and a high school diploma with English Language Arts 30-1 or 30-2, or equivalent. The College also offers a four year applied degree program in Child Studies. The entrance requirement is a high school diploma with a 60 per cent average in English Language Arts 30-1, Social Studies 30 and three other appropriate Grade 12 subjects.
- **Rocky Mountain College**, a private vocational school in Calgary, offers a four year BA in Human Services degree program with a specialization in Child and Youth Care. The entrance requirement is a 65 per cent average in four matriculation level courses.

Admission requirements may include a personal interview, medical immunization records and testing, first aid training, or criminal record and Child Welfare information checks. Post-secondary institutions may give students credit for prior learning. For information about mature student admission policies, please check institution calendars or websites.

In addition to formal education programs, most child and youth treatment centres offer orientation or volunteer programs, and in-service training.

Other Requirements

The Child and Youth Care Association of Alberta offers a certification program for child and youth care workers. Certification is not mandatory in this occupation but it may be asset when seeking employment.

Employment and Advancement

(section revised JANUARY 2006)

Child and youth care workers are employed by:

- provincial government departments
- school boards
- private agencies (for example, treatment centres, group homes, family support and independent living programs)
- community youth programs (for example, youth emergency shelters, community leagues, schools, after-school programs).

Experienced child and youth care workers may advance to supervisory positions. Further advancement generally requires additional education.

Child and youth care workers are part of the larger National Occupational Classification 4212: Community and Social Service Workers. In Alberta, over 75 per cent of people employed in this classification work in the **Health Care and Social Assistance** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Health Care and Social Assistance industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 9,600 Albertans are employed in the Community and Social Service Workers occupational group which is expected to grow 1.7 to 2.7 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 160 to 260 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since child and youth care workers form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for child and youth care workers.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Community and Social Service Workers occupational group working part-time or full-time earned from **$14,100 to $104,900 a year**. The average salary was **$27,800 a year**.

For information about current collective agreements in the public and not-for-profit sectors, see the Health Sciences Association of Alberta (HSAA) website.

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)
EDinfo website: www.alis.gov.ab.ca/edinfo

Child and Youth Care Association of Alberta (CYCAA) website: www.cycaa.com

Health Sciences Association of Alberta (HSAA) website: www.hsaa.ca

Related Occupational Profiles

Addictions Counsellor
Correctional Services Worker
Early Childhood Educator
Educational Assistant
Home Economist
Human Ecologist
Life Skills Coach
Mental Health Worker
Parole/Probation Officer
Psychologist
Rehabilitation Practitioner
Social Worker

Related High School Subjects

Community Health; Language Arts; Legal Studies; and Social Studies

Related Post-Secondary Fields of Study

Social Sciences, Law and Religious Studies; and Social, Community and Protective Services

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For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Chiropractic Assistant

Produced DECEMBER 2004

Chiropractic assistants perform a variety of support tasks to assist chiropractors with patient care.

NOC Number(s): 3414.2
Minimum Education: High school diploma
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **M S o**

Duties

Chiropractic assistants work under the direct supervision of chiropractors. They may perform mostly clerical or mostly clinical duties or both, depending on the size of the office. The more employees in an office, the more likely chiropractic assistants will specialize in one type of work or the other.

In general, chiropractic assistants:

- perform routine reception and clerical duties such as answering the telephone, scheduling appointments, maintaining chiropractic health records and ordering supplies (for more information, see the Administrative Assistant occupational profile)
- greet patients and show them to adjustment rooms
- help patients complete chiropractic health histories
- connect and operate treatment machines such as massagers, electro-therapy machines and ultrasound equipment
- apply ice packs and heat packs
- assist chiropractors with patient health education
- accept payment for health products
- keep examining and waiting rooms clean and orderly
- perform accounting-related duties such as keeping track of accounts payable and receivable, bank deposits and payroll (for more information, see the Accounting Technician occupational profile)
- process claims for health insurance, motor vehicle insurance or Workers Compensation.

Working Conditions

Chiropractic assistants spend much of their time on their feet. They may be required to lift items weighing up to 10 kilograms.

Hours of work vary depending on chiropractors' office schedules. For example, they may work weekdays and some Saturdays or evenings. Some chiropractic assistants work part-time.

Personal Characteristics

Chiropractic assistants need the following characteristics:

- a mature attitude toward the human body
- the ability to follow directions closely
- good communication skills
- the ability to work effectively as part of a team
- the ability to work on several tasks simultaneously
- the ability to establish rapport with and instill confidence in patients who may be in pain.

They should enjoy having guidelines for their work and assisting patients.

Educational Requirements

Chiropractic assistants are generally **trained on the job**. A high school diploma is usually required but additional

employment requirements vary depending on the duties of the particular position. Computer and bookkeeping skills are a definite asset.

Employment and Advancement

(section revised JANUARY 2006)

Chiropractic assistants work for chiropractors in private practice.

Most chiropractors employ a small number of assistants, usually only one or two, so opportunities to advance to supervisory positions are limited. Advancement generally takes the form of opportunities to learn new skills.

Chiropractic assistants are part of the larger National Occupational Classification 3414: Other Assisting Occupations in Support of Health Services. In Alberta, most people employed in this classification work in the following industries:

- **Retail Trade**
- **Health Care and Social Assistance.**

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 7,100 Albertans are employed in the Other Assisting Occupations in Support of Health Services occupational group which is expected to grow 2.0 to 3.0 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 140 to 220 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since chiropractic assistants form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for chiropractic assistants.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Other Assisting Occupations in Support of Health Services occupational group working part-time or full-time earned from **$11,900 to $58,200 a year.** The average salary was **$23,700 a year.**

Related Occupational Profiles

Administrative Assistant
Occupational Therapist Assistant
Physical Therapy Assistant

Related High School Subjects

Community Health; Financial Management; and Language Arts

Related Post-Secondary Fields of Study

Clerical and Administrative Support

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Chiropractor

Produced DECEMBER 2004

Chiropractors are health professionals concerned with the diagnosis, treatment and prevention of mechanical disorders of the musculoskeletal system and the effects of these disorders on the function of the nervous system and general health. They emphasize manual treatments including spinal manipulation and adjustment.

NOC Number(s): 3122
Minimum Education: 7 years post-secondary education/training
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: **I S M**

Duties

In general, chiropractors:

- diagnose health problems by reviewing patients' health and medical histories; questioning, observing and examining patients; and interpreting x-rays
- advise patients regarding recommended courses of treatment
- treat patients which often involves a series of spinal adjustments and exercises to correct the musculoskeletal system, and to restore and maintain the function of the nervous system
- recommend supportive treatments such as dietary and lifestyle changes
- refer patients to other health practitioners when appropriate.

Chiropractors may take x-rays themselves or refer patients to medical x-ray technologists.

Working Conditions

Most chiropractors work in their own clinics or with other chiropractors. Some chiropractors share offices with other health providers such as massage therapists, physiotherapists or family physicians.

Chiropractors must stand for much of their working day. Some upper body strength is required to perform specific procedures and assist in patient movement.

Personal Characteristics

Since the work is demanding and they often deal with people who are in pain, chiropractors need the following characteristics:

- a pleasing personality
- good listening skills
- kindliness and empathy
- patience and perseverance
- endurance
- good health
- good stress management skills
- a high degree of manual dexterity.

They should enjoy analyzing information to determine the most effective treatments, advising patients and adjusting or manipulating the patients to promote health and wellness.

Educational Requirements

Two post-secondary institutions in Canada offer chiropractic programs of study:

- the **Canadian Memorial Chiropractic College** in Toronto
- the **Universite du Quebec** in Trois Rivieres (instruction in French).

In Canada, the minimum entrance requirement to four year chiropractic programs is successful completion of at least three years of post-secondary education. Recommended pre-chiropractic courses include:

- chemistry, biology and introductory psychology in first year
- organic chemistry and physiology in second year
- biochemistry, micro-biology and physiology in third year.

Most entrants into chiropractic programs have a bachelor's degree in arts or science (BA or B.Sc.).

Chiropractic colleges in the United States also are recognized by the College of Chiropractors of Alberta. In the United States, the entrance requirement for some colleges is two years of university studies.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Other Requirements

Under Alberta's Chiropractic Profession Act and Chiropractic Profession Regulation, only registered members of the College of Chiropractors of Alberta (CCOA) may call themselves Chiropractors or practice chiropractic.

Employment and Advancement

(section revised JANUARY 2006)

Chiropractors operate independent practices as sole proprietors or join other chiropractors or health providers to form a clinic. Chiropractors may offer services in the areas of occupational and industrial health, athletic injuries, x-ray interpretation, orthopedics, rehabilitation, nutrition, geriatrics or pediatrics.

It may take some time and considerable capital expenditure to build a thriving, profitable practice. Business skills and knowledge are required.

In Alberta, people employed as chiropractors work in the **Health Care and Social Assistance** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Health Care and Social Assistance industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 800 Albertans are employed in the Chiropractors occupational group which is expected to grow 2.6 to 3.6 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 20 to 30 **new** positions will be created each year **in addition** to job openings created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

The demand for chiropractic service is greatest in towns and rural areas.

Salary

(section revised OCTOBER 2005)

In 2003, Albertans in theChiropractors occupational group an average salary of **$61,100 per year** (2003 Alberta Wage and Salary Survey).

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

Canadian Chiropractic Association website: www.ccachiro.org

College of Chiropractors of Alberta website: www.albertachiro.com

Student Canadian Chiropractic Association website: www.scca.ca

Related Occupational Profiles

Acupuncturist
Naturopathic Doctor
Optometrist
Physician
Podiatrist

Related High School Subjects

Community Health; Language Arts; Management and Marketing; Mathematics; Physical Education; and Science (Biology; Chemistry; and Physics)

Related Post-Secondary Fields of Study

Health Care and Medical Sciences; and Sciences

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Choral Conductor

Produced MAY 2003

Choral conductors organize, direct and conduct choral groups such as community and school choirs, church choirs, children's choirs, small chamber choirs, college choral ensembles, opera choruses and other groups that specialize in particular periods or styles of music.

NOC Number(s): 5132.1
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **D I M**

Duties

Depending on the type of ensemble, choral conductors may:

- conduct rehearsals and performances
- choose suitable repertoire music
- work with clergy to select music for church services
- work with instrumentalists and solo vocalists
- conduct auditions, and recruit and educate performers
- plan rehearsal and performance schedules
- book locations, accompanists and instrumentalists
- promote the ensemble, plan and implement fund raising activities and arrange tours
- co-ordinate parent and support groups.

Rehearsals are a major part of a choral conductor's job, especially around performance dates and before competitions. Many choral groups are amateur ensembles so rehearsals must be scheduled when volunteer members are available, often during evenings or on weekends.

Choral conductors use conducting techniques to communicate their musical intentions (tempo, phrasing, tone, colour, volume, etc.). A conductor's preparation and enthusiasm contributes greatly to the success of rehearsals and to the quality of the final performance.

When choosing music, conductors consider:

- the size of the ensemble
- the interests and abilities of ensemble members
- the need for variety and challenge for both the audience and performers
- suitability for different performance situations
- the availability of scores
- budget limitations.

Unless choral conductors are fortunate enough to have a manager or administrative assistant, they are usually responsible for administrative tasks such as:

- applying for grants and establishing a budget
- scheduling concerts to co-ordinate with other choral, symphonic and operatic engagements
- designing and printing programs and promotional materials
- ordering musical scores
- arranging the seating of the choir
- insisting on regular attendance and commitment from members.

Choir members may be enlisted to help with administrative functions.

Once the regular performance season is over, choirs often tour locally, nationally or internationally. Choral conductors may co-ordinate tours themselves or hire touring companies to arrange concert dates, venues, accommodation and transportation for longer tours.

Working Conditions

Choral conductors spend some time alone preparing scores and performing administrative tasks; however, much of their time is spent with the members of their choirs. They often work very long hours in rehearsals and preparing new musical works for the group. Most rehearsals and performances are in the evenings and on weekends.

Personal Characteristics

Choral conductors need the following characteristics:

- the natural talent for rhythm, pitch and shaping of phrases needed by all musicians
- self-confidence and leadership skills
- good communication skills
- a genuine appreciation of each person's contribution to the group
- the ability to deal with a work schedule that includes long hours of score-study, planning and rehearsing.

They should enjoy taking charge and controlling situations, and developing innovative approaches.

Educational Requirements

General musical ability and a thorough music education are essential. Choral conductors must be able to detect and correct problems related to various aspects of choral music such as rhythm, inonation, vocal tone and diction.

Formal training requirements for choral conductors vary greatly.

- Church choir conductors may be congregation members who have musical experience and a suitable personality, or professional musicians who have degrees in conducting or organ performance. Community choir leaders come from equally varied backgrounds.
- Conductors of school choirs may be teachers who have a special interest in music, or teachers who have degrees in both music and education.
- Positions in colleges and universties often require a doctoral degree (PhD) in choral conducting.
- Conductors of professional groups are hired on the basis of their performance record and an audition.

The **Alberta Choral Federation** offers resources and programs throughout the province for interested individuals, choir members, choral groups, conductors and organists. These programs cover topics such as choral music, conducting techniques, administration of choral groups and choral repertoire.

For a listing of Alberta post-secondary institutions that offer programs in music, see the Instrumental Musician and Singer occupational profiles.

Those wishing to teach music and conduct groups in schools may take any of the following education routes:

- a four year Bachelor of Education (B.Ed.) degree specializing in music
- a five year combined Bachelor of Music/B.Ed. degree
- a three year or four year bachelor's degree in music followed by two or more years in a Bachelor of Education (After Degree) program.

For a listing of Alberta post-secondary institutions that offer education degree programs, see the Secondary School Teacher occupational profile.

Employment and Advancement

Choral conductors may work with:

- elementary and secondary school choirs
- university and college choirs
- church choirs
- professional choirs
- amateur groups.

Working as a choral conductor in a school often involves teaching courses in vocal techniques, conducting, music theory and band. In some schools, conductors also teach other subjects as well.

University and college positions are limited in number and generally include teaching responsibilities as well as conducting responsibilites. These positions usually require a minimum of a master's degree in music and often a PhD.

Church choral directors often have other duties such as being the church organist and planning the musical parts of worship services.

There are a limited number of professional choral groups in Canada that offer full-time employment. Exceptional choral conductors are sometimes hired nationally or internationally as guest conductors for particular performances.

Many choral conductors who work with amateur groups must supplement their incomes by working in other occupations.

Salary

(section revised OCTOBER 2005)

Salaries for conductors of professional choirs, and for school choral directors vary depending on the individual's qualifications and experience. Church choir directors may be paid lower salaries or be volunteers. Community amateur choirs usually provide the conductor with an honorarium.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Conductors, Composers and Arrangers occupational group working part-time or full-time earned an average salary of **$22,900 a year**.

Other Sources of Information

Alberta Choral Federation website: www.musicalberta.com/acf.html

Cultural Human Resources Council website: www.culturalhrc.ca

Related Occupational Profiles

Composer
Music Copyist
Orchestra/Band Conductor
Orchestrator/Arranger
Singer
Songwriter

Related High School Subjects

Fine Arts (Music); and Language Arts

Related Post-Secondary Fields of Study

Fine Arts and Performing Arts

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Choreographer

Produced JULY 2003

Choreographers express ideas through movement. They design dances and create dance movement for professional dancers and dance companies, dance studios, amateur performing dance companies, musical theatre, opera, fashion shows, film, television productions and special events.

NOC Number(s): 5131.3
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **I D S**

Duties

Choreographers translate stories, ideas and moods into dance movements. This may involve:

- expressing ideas through physical movements, patterns and formations
- experimenting with different dancers, dance steps and placements
- choosing the music, sound effects or spoken narrative to accompany the dance steps
- restaging existing works in a dance company's repertoire to give them a new interpretation
- choosing suitable dancers
- teaching dancers or other performers
- practising regularly to keep toned and in shape.

To communicate creatively through the human form, choreographers must take into consideration the limits to which dancers' bodies can be pushed. They often conduct rehearsals with performers to achieve desired interpretations of their work.

Choreographers use several different ways to record dance movements, each of which requires a technical understanding of the patterns and formations of choreography.

In small dance companies, choreographers may also be responsible for designing the set lighting effects and costumes. Other artistic elements (e.g. slides or film images) may also be incorporated into the dance production.

Working Conditions

Choreography is a very time consuming process that requires working long hours, including weekends and holidays. Rehearsals are particularly busy times for choreographers because they must spend time with artistic directors, theatre designers and the technical crew. Rehearsals usually take place during the day; performances are usually in the evening.

Personal Characteristics

Choreographers should have an interest in different musical styles and the ability to teach others how to interpret movements and moods. They should enjoy creating innovative dances, taking charge of situations and teaching others.

Educational Requirements

Professional choreographers almost always come from a **dancing background.** They are often trained in various styles of dance, from classical ballet to modern dance, and draw on all of these traditions in their interpretive creations. They should also be knowledgeable about historical costumes and human anatomy, have a background in production design and know how to read music.

There are no formal schools of choreography in Canada. However, most dance companies provide opportunities for experienced dancers to learn by working under the direction of skilled choreographic designers. Classes in choreography are part of most dance programs.

Dance training is available at colleges, universities, private dance schools and professional dance companies throughout Alberta. For more information, see the Dancer occupational profile.

Employment and Advancement

(section revised JANUARY 2006)

Professional choreographers usually work part-time as choreographers and work in other occupations such as dancer, dance teacher or movement coach as well. Some are the artistic directors of their own dance companies.

Choreographers usually work with professional dance companies. Full-time (resident) positions for choreographers are rare. In fact, dance companies often ask members of their dance troupe to create new works rather than contract a choreographer.

A choreographer may also be hired by organizers of special events such as:

- community festivals
- fashion shows
- half-time shows at sporting events
- entertainment at large spectacles such as the Olympic games
- television shows or music videos.

Opera companies and musical theatre productions may hire choreographers to train their actors in dance movements or to design dance sequences.

Choreographers are part of the larger National Occupational Classification 5131: Producers, Directors, Choreographers and Related Occupations. In Alberta, most people employed in this classification work in the **Information, Culture and Recreation** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Information, Culture and Recreation industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 1,950 Albertans are employed in the Producers, Directors, Choreographers and Related Occupations group which is expected to grow 1.2 to 2.2 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 20 to 50 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since choreographers form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for choreographers.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Choreographers may receive royalties every time one of their choreographed pieces is performed and/or fees for choreographing works for special events. Fees are usually based on the choreographer's reputation and the length of the piece.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Producers, Directors, Choreographers and Related Occupations group working part-time or full-time earned from **$16,200 to $108,800 a year.** The average salary was **$46,800 a year.**

Related Occupational Profiles

Dancer
Producer - Film, Radio, Television and Theatre
Theatre Director

Related High School Subjects

Fine Arts (Dance); Language Arts; and Social Studies

Related Post-Secondary Fields of Study

Fine Arts and Performing Arts

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Cinematographer

Produced MAY 2003

Cinematographers use camera, lighting and related equipment to create the desired visual mood or "feel" for a film or video production.

NOC Number(s): 5131.7
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **D I O**

Duties

Cinematographers use lighting, lens selection, filtration, exposure and focus to create an image on motion picture film or videotape. When using motion picture cameras, results are delayed and not instantly visible. Cinematographers must rely on their knowledge and experience to anticipate the effect production decisions will have on the final image. Their primary responsibility is to define an appropriate "look " and determine how best to achieve it.

Depending on the size and scope of the project, cinematographers may be called "directors of photography" and direct the work of several assistants, or they may operate and set up camera and lighting equipment themselves. In general, however, cinematographers:

- control and create the photographic or electronic images for every second of film and video footage
- select the type of camera, lighting equipment, film, video camera menus, filters and lenses to be used
- adjust cameras for desired focus, exposure, composition and other settings
- control the transfer process in which film negatives are digitally transformed to video images for computer editing
- alter video camera menus to achieve the desired effect
- work closely with the director and other production crew members.

In some situations, cinematographers may also:

- attend production meetings and discuss lighting and camera needs with directors
- prepare and administer budgets.

Both film and high definition video are used as original mediums for documentaries, national commercials, feature films, movies of the week and television series productions.

Working Conditions

Cinematographers experience a variety of working conditions, depending on the type of production (e.g. documentary, television series) and where a film is being shot. For example, they may work "on location" in all kinds of weather, or indoors on a sound stage.

Hours of work also vary greatly. For example, cinematographers may have to photograph dawn over the foothills or twilight on a mountain lake. Those employed in motion pictures may work long hours (10 to 12 hour days) with short deadlines. Some travel is required when working in remote locations.

The work can be stressful when last minute changes are required.

Personal Characteristics

Cinematographers need the following characteristics:

- creativity and talent
- the ability to visualize finished product before its completion
- an appreciation of the composition and "feel" of visual images
- a willingness to put in long hours practicing their art, developing their own style and keeping up with

technological changes
- good communication skills
- good leadership skills
- the ability to learn by doing
- the ability to market their work and operate independently.

They should enjoy directing and co-ordinating camera and lighting work, finding innovative ways to do things, and working with equipment.

Educational Requirements

Cinematographers need a solid grounding in both the theoretical and technical aspects of the work. It is still possible to enter the field by gaining practical experience as a videographer or "stills" photographer, but this can take many years.

There are no post-secondary programs specifically in cinematography currently offered in Alberta. The following post-secondary institutions offer related programs.

- **Grant MacEwan College** in Edmonton offers a two year Digital Arts and Media diploma program. The entrance requirement is a high school diploma with at least 65 per cent in English 30 and Math 30, or equivalent, and successful completion of an accredited Introductory MacIntosh computer course or equivalent.
- **Mount Royal College** in Calgary offers a two year Broadcasting diploma program. Entrance requirements include a high school diploma or equivalent, keyboarding skills, a portfolio, testing and an interview.
- The **Northern Alberta Institute of Technology** in Edmonton offers a two year Radio and Television diploma program. The entrance requirement is a high school diploma or equivalent with at least 60 per cent in English 30 or 33 and at least 50 per cent in Grade 11 math, science and social studies (Grade 12 courses recommended).
- **Red Deer College** offers a one year post-diploma Motion Picture Arts, Advanced Certificate program and a Bachelor of Applied Motion Picture Arts degree program. The entrance requirement for both programs is two years of a post-secondary Theatre Studies Program, or equivalent, with a grade point average of at least 2.0/4. The entrance requirement for the Theatre Studies diploma program at Red Deer College is a high school diploma with English 30 or mature student status.
- The **Southern Alberta Institute of Technology** in Calgary offers a two year Cinema, Television, Stage and Radio diploma program with a specialization in film/video. The entrance requirement is a high school diploma or equivalent with at least 60 per cent in English 30 or 33. Typing skills are essential. A resume/portfolio, research paper and an interview may be required. SAIT also offers a two year Broadcast Technology diploma program. The entrance requirement is a high school diploma or equivalent with English 30 or 33 and Pure or Applied Math 30 or 33.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

For information about Fine Art programs with specializations in photography, see the *Photographer* occupational profile.

The **Film and Video Arts Society** and the **Calgary Society of Independent Filmmakers** offer courses in cinematography on an as needed basis (see Other Sources of Information).

Employment and Advancement

(section revised JANUARY 2006)

Most cinematographers are self-employed artists who work on a contract basis for:

- production companies
- television studios
- advertising agencies
- independent film producers
- IATSE (International Alliance of Theatrical Stage Employees)
- anyone else interested in making films, videos, documentaries or advertising features (e.g. shooting independent music videos or local commercials).

To gain experience, aspiring cinematographers may work as lighting and grip technicians, camera assistants or camera operators, or volunteer to work on independent film or video productions or with local cable production companies. With experience, they may find work as camera assistants for established cinematographers. FAVA and CSIF act as resource centres for inexperienced cinematographers who wish to gain experience by volunteering for film projects.

Large production houses such as the Canadian Broadcasting Corporation or the National Film Board have a few cinematographers on staff full-time. However, most often, they contract work out to freelance cinematographers.

Cinematographers are part of the larger National Occupational Classification 5131: Producers, Directors, Choreographers and Related Occupations. In Alberta, most people employed in this classification work in the **Information, Culture and Recreation** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Information, Culture and Recreation industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 1,950 Albertans are employed in the Producers, Directors, Choreographers and Related Occupations group which is expected to grow 1.2 to 2.2 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 20 to 50 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since cinematographers form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for cinematographers.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Salaries for cinematographers depend on talent and experience. Freelance cinematographers negotiate pay rates on a job-by-job basis. Those working within a union such as IATSE have wage guidelines set out in the union agreement.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Producers, Directors, Choreographers and Related Occupations group working part-time or full-time earned from **$16,200 to $108,800 a year.** The average salary was **$46,800 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Calgary Society of Independent Filmmakers website: www.csif.org

Canadian Society of Cinematographers website: www.csc.ca

Film and Video Arts Society website: fava.ca

Related Occupational Profiles

Film Director
Lighting Designer
Photographer
Producer - Film, Radio, Television and Theatre
Television Camera Operator

Related High School Subjects

Communication Technology; Enterprise and Innovation; Financial Management; Fine Arts (Visual Arts); Language Arts; Management and Marketing; Mathematics; and Social Studies

Related Post-Secondary Fields of Study

Communications; and Fine Arts and Performing Arts

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

The information contained in this profile was current as of the dates shown. **Salaries, employment outlook** and **educational programs** may change. Please check the information before making any career decisions.

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Civil Engineer

Produced JUNE 2004

Civil engineers plan, design and supervise the construction, maintenance and decommissioning of a wide variety of public and private structures and facilities.

NOC Number(s): 2131
Minimum Education: 4 years post-secondary education/training
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: **I O D**

Duties

Civil engineers use traditional and high-tech tools (e.g. Intelligent Transportation Systems, Smart Systems, specialized materials) to solve problems and meet challenges such as pollution, traffic congestion, urban development, community planning, drinking water and energy needs. They examine and evaluate each project to find the most cost effective solutions to problems while still maintaining recognized standards. For example, they may plan and build:

- industrial buildings
- roadways, railways and bridges
- airports
- offshore drilling structures
- dams and reservoirs
- water and wastewater collection, management, treatment and distribution systems.

Civil engineers may specialize in any of the following branches of civil engineering.

Construction engineers plan and manage the construction of public and private buildings and facilities. In general, they:

- determine project requirements in terms of equipment, materials and human resources
- estimate costs and monitor expenditures
- apply their knowledge of various construction methods to the basic principles of planning, organizing, financing, managing and operating a construction project
- supervise technical support personnel, contractors and construction workers.

Geotechnical engineers provide the information on soil conditions required to design and construct foundations, underground structures, tunnels, embankments and dams. In general, they:

- analyze the properties of soil and rock that support foundations, pavements and underground facilities
- evaluate the potential settlement of buildings, the influence of slopes and landfills, and the effects of groundwater seepage, sliding, frost action, earth shifts and earthquakes
- design offshore drilling platforms and the foundations of high-rise buildings
- evaluate and design systems to eliminate or mitigate ground contamination
- design open pit mines and tailings dams.

Structural engineers usually work as part of a team that may include architects, mechanical and electrical engineers, construction contractors and project developers. In general, they:

- design load-bearing structures such as bridges, towers, offshore structures and buildings, keeping in mind the stresses that these structures must withstand
- carry out inspections at each stage of the building process to ensure adequate strength and rigidity, and analyze the structure's ability to withstand the effects of wind, snow, vibration and other forces
- check load and weight distribution requirements.

Transportation engineers plan and design systems for the safe and efficient movement of people and goods. They must have an understanding of the economic and social factors involved as well as engineering principles. Often working in conjunction with urban planners, transportation engineers:

- plan and design transportation systems such as highways, streets, railroads, airfields and mass transit systems
- provide advice on the operation and maintenance of all types of transportation facilities.

Water resource engineers design systems that collect, store and distribute water. In general, they:

- oversee the construction and maintenance of dams, reservoirs, hydroelectric power plants, canals and locks
- predict and analyze patterns of water-flow (run-off and flooding) and evaluate their potential effects
- design systems for the delivery of drinking water and collection and treatment of municipal waste and storm water
- design holding areas and storm sewers to accommodate water overflow and flooding conditions
- develop water systems designed to supply water to irrigation projects, prevent flooding, protect beaches and manage rivers.

For information about another specialization in civil engineering, see the Environmental Engineer occupational profile.

Working Conditions

Working environments for civil engineers are as varied as their projects. They may spend most of a working day at a computer workstation, on a project work site or in front of a public hearing. They usually work with a team that may include professionals from other engineering and scientific disciplines, contractors, project owners, architects, bankers, lawyers or government officials.

Civil engineers must constantly update their knowledge and skills to keep up with advancements in this rapidly changing field. They may be required to work long hours and experience a great deal of pressure to meet deadlines and design standards.

Personal Characteristics

Civil engineers need the following characteristics:

- good communication skills
- the ability to analyze data, review calculations and prepare cost estimates
- the ability to visualize three-dimensional objects from two-dimensional drawings
- the ability to think logically and solve problems
- a capacity for details.

They should enjoy being innovative, doing work that requires precision, making decisions and supervising people, and having variety in their work.

Educational Requirements

The basic educational requirement for working as a civil engineer is a **four year bachelor's degree in civil engineering**.

In Alberta, the following universities offer bachelor of science (B.Sc.) degrees in civil engineering:

- the **University of Alberta** in Edmonton
- the **University of Calgary**.

The minimum admission requirement for the engineering programs at both universities is a high school diploma with an overall average of 78 or 80 per cent in English 30, Pure Math 30, Math 31, Chemistry 30 and Physics 30.

A co-operative education or internship program, consisting of periods of academic study alternating with periods of planned work experience in industry, is available through the Faculties of Engineering at both the University of Alberta and the University of Calgary. These programs usually require about five years to complete.

Post-secondary institutions throughout the province offer university transfer programs which allow students to apply up to two years of study toward university bachelor's degree programs. It is the student's responsibility to ensure that the courses they choose to take will be accepted for credit at the institution to which they wish to transfer.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Other Requirements

(section revised OCTOBER 2004)

Under Alberta's Engineering, Geological and Geophysical Professions Act, you must be a registered member of the Association of Professional Engineers, Geologists and Geophysicists of Alberta (APEGGA) to practice as a Professional Engineer. You do **not** have to be registered if you work under the direct supervision of a Professional Engineer and do not call yourself a Professional Engineer.

Employment and Advancement

(section revised JANUARY 2006)

Civil engineers work in construction and related industries. They are employed by:

- municipal, provincial and federal government departments of transportation, public works or environment
- engineering consulting firms
- construction contractors
- property developers
- resource industries
- public utilities
- railroad companies
- manufacturing firms.

With experience, civil engineers can become project managers and eventually advance to the management of very large projects. Some experienced civil engineers establish their own construction or consulting companies. Those who have doctoral (PhD) degrees may teach at a university or conduct research.

In Alberta, over 75 per cent of people employed as civil engineers work in the following industries:

- **Professional and Technical Services**
- **Construction**
- **Oil and Gas Extraction**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 5,950 Albertans are employed in the Civil Engineers occupational group which is expected to grow 2.3 to 3.3 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 130 to 200 **new** positions will be created each year **in addition** to job openings created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised SEPTEMBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Civil Engineers occupational group working part-time or full-time earned from **$22,900 to $152,900 a year.** The average salary was **$77,400 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)
EDinfo website: www.alis.gov.ab.ca/edinfo

Association of Professional Engineers, Geologists and Geophysicists of Alberta (APEGGA) website: www.apegga.org

Canadian Society of Civil Engineering website: www.csce.ca

Construction Sector Council website: www.csc-ca.org

Related Occupational Profiles

Architect
Civil Engineering Technologist
Electrical Contractor
Environmental Engineer
Geomatics/Surveying Engineer
Hydrologist
Soil Scientist
Urban, Regional and Park Planners

Related High School Subjects

Construction Technologies; Design Studies; Energy and Mines; Fabrication Studies; Financial Management; Information Processing; Language Arts; Mathematics; Science (Chemistry; and Physics); and Wildlife

Related Post-Secondary Fields of Study

Engineering, Architecture and Related Studies

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Civil Engineering Technologist

Produced JUNE 2004

Civil engineering technologists work with engineers, architects, surveyors and contractors in designing, developing and building civil engineering projects that are economical and functional and satisfy applicable standards and building codes.

NOC Number(s): 2231.1
Minimum Education: 2 years post-secondary education/training
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: **I M d**

Duties

Civil engineering projects include:

- roadways and highways
- water and wastewater treatment and distribution systems
- storm water drainage systems
- bridges
- buildings
- dams
- canals and drainage channels
- reservoirs
- railroads
- recreational facilities and parks
- landfills (solid waste facilities)
- landslide repairs
- erosion controls.

In general, civil engineering technologists:

- design and prepare drawings for structures to be built of timber, concrete or steel
- design and prepare construction drawings for highways, streets, urban subdivisions and water, sewer and storm water systems
- assist in planning and scheduling civil engineering projects
- prepare cost estimates and monitor project costs
- review shop drawings to ensure that they conform to design concepts
- conduct field surveys during various phases of design and construction
- inspect and supervise work at construction sites to ensure that safety and design specifications are followed and costs are contained
- monitor construction and prepare "as built" drawings
- analyze results and prepare statistical data, tables and drawings for traffic surveys and program traffic signals
- inspect water and wastewater treatment systems to ensure that pollution control requirements are met
- inspect dams, power plants, generating plants and other structures to assess the need for maintenance and repair work
- design culverts and open flow channels to facilitate water run-off
- conduct field and laboratory tests on soils, asphalt and concrete, assessing them according to specifications set by the Canadian Standards Association (CSA) and the American Society for Testing Materials (ASTM) tests
- install, read and interpret instrumentation (e.g. slope indicators, thermistors)
- develop concrete or asphalt mixes specially designed for specific uses and conditions
- interpret quality control tests and prepare technical reports
- manage projects (e.g. track and report progess, prepare invoices).

Specific job titles in this occupation vary depending on the particular aspect of civil engineering in which the technologist works. Typical titles include:

- building inspector
- civil engineering design technologist
- materials testing technologist
- traffic technologist
- construction co-ordinator, foreman or superintendant
- estimator
- technical representative.

Working Conditions

Civil engineering technologists work in offices and at construction sites. While in the office, technologists often work at a computer. At construction sites, they spend much of the day on their feet, inspecting construction work, sometimes in poor weather conditions. Part of the day may also be spent at an on-site office.

Civil engineering technologists usually work regular office hours but overtime may be required to meet completion deadlines. They often are expected to work away from home on major construction projects, sometimes in isolated locations.

Personal Characteristics

Civil engineering technologists need the following characteristics:

- strong mathematical and science skills (physics in particular)
- good oral and written communication skills
- excellent analytical and problem solving skills
- the ability to work independently.

They should enjoy doing work that requires taking a methodical approach, finding innovative solutions to problems and directing the work of others.

Educational Requirements

(section revised MAY 2005)

The basic requirement for working in this field is a **diploma in civil engineering technology**.

In Alberta, the following post-secondary institutions offer two year civil engineering technology diploma programs:

- **Lethbridge Community College**. The minimum admission requirement is a high school diploma with Pure Math 30 (or Math 30, or at least 65 per cent in Applied Math 30 or Math 33), one of: Physics 20 (recommended), Chemistry 20 or Science 20, and a basic understanding of computer technology.
- **Northern Alberta Institute of Technology (NAIT)** in Edmonton. The minimum admission requirement is a high school diploma or equivalent with English 30 or 33, Math 30 (or at least 60 per cent in Math 33) and one of: Science 30, Physics 30 or Chemistry 30. An interest in and aptitude for applied sciences, especially those with a physics base, are definite assets.
- **Southern Alberta Institute of Technology (SAIT)** in Calgary. The minimum admission requirement is a high school diploma or equivalent with English 30, Pure Math 30 or Math 30, and Science 30 or Physics 20. Students may be accepted with Math 33 and English 33. All students write placement tests in English, math and physics.

Graduates of these programs who wish to continue their studies may be granted some credit toward degree programs at specific Canadian universities.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Other Requirements

(section revised OCTOBER 2004)

Certification with the Alberta Society of Engineering Technologists (ASET) is voluntary.

Under Alberta's Engineering, Geological and Geophysical Professions Act, Registered Professional Technologists - Engineering must be ASET members to engage in a defined scope of engineering practice as registered by the Association of Professional Engineers, Geologists and Geophysicists of Alberta (APEGGA).

Employment and Advancement

(section revised JANUARY 2006)

Civil engineering technologists are employed by:

- construction companies
- engineering consulting firms
- manufacturing companies
- contractors
- land developers
- municipal and provincial public works, environment and transportation departments.

They may be employed full-time or on a contract basis, in rural or urban locations. Some work is seasonal.

Civil engineering technologists may work in the construction field as estimators, inspectors, supervisors or project managers. Some are employed as laboratory technologists testing construction materials and building products, or sales representatives for construction materials.

Civil engineering technologists are part of the larger National Occupational Classification 2230: Technical Occupations in Civil, Mechanical and Industrial Engineering. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Construction**
- **Professional and Technical Services**
- **Public Administration**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

About 2,200 Albertans are employed in the Civil Engineering Technologists and Technicians occupational group which is expected to grow 2.2 to 3.2 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 40 to 70 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since civil engineering technologists form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for civil engineering technologists.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Civil Engineering Technologists and Technicians occupational group working part-time or full-time earned from **$27,600 to $106,500 a year.** The average salary was **$62,100 a year.**

For more detailed information, see ASET's Annual Salary Surveys.

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Society of Engineering Technologists (ASET) website: www.aset.ab.ca

Construction Sector Council website: www.csc-ca.org

Related Occupational Profiles

Civil Engineer
Drafting Technician
Electrical Contractor
Engineering Design and Drafting Technologist
Geomatics/Surveying Technologist
Mapping Technologist
Steel Detailer
Technical Sales Representative

Related High School Subjects

Construction Technologies; Design Studies; Energy and Mines; Fabrication Studies; Financial Management; Information Processing; Language Arts; Mathematics; Science (Chemistry; and Physics); and Wildlife

Related Post-Secondary Fields of Study

Engineering and Science Technologies

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Coach

Produced MARCH 2005

Coaches recruit, train and instruct athletes to produce the best sports performances possible. Their job titles generally reflect their sport (e.g. hockey coach, baseball coach, swim coach, figure skating coach) or their position relative to others in an organization (e.g. head coach, club coach).

NOC Number(s): 5252.1
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **D S M**

Duties

Coaches direct athletes' physical and mental training, conduct daily practices and develop strategies for competitions. Their duties and responsibilities vary considerably depending on the sport and level of competition. However, in general, coaches:

- help athletes identify and pursue realistic goals
- develop training plans
- teach skills, plays and tactics
- scout prospective athletes
- keep up with changing rules, techniques, technology and philosophies in their sport
- analyze athletes' performances and modify coaching programs accordingly
- ensure the safety of athletes at all times
- practice and teach high standards of sportsmanship and ethical conduct.

During the pre-season, coaches:

- arrange training camps or pre-season try-outs
- plan and direct fitness programs for the team and individual players
- plan and conduct practices
- analyze the strengths and weaknesses of their athletes and those of the competition (often through the use of videotapes and films)
- prepare play strategies based on their analyses
- assist in fund raising
- acquire equipment (if necessary)
- arrange schedules
- choose the team for the coming season.

During the season, coaches continue to direct fitness programs, conduct daily practices and analyze performance. They also:

- prepare for competition tours and events
- direct the game plan and tactics
- encourage, motivate and direct the team and individual athletes
- keep records of athlete, team and opposing team performance
- revise plans and strategies as needed
- meet with media representatives.

In the off-season, coaches may:

- do fund raising and public relations work
- review videos of past games and individual performances
- make plans for next season
- scout new players or athletes
- attend and give clinics.

In some sports, there is no off-season and coaches have year-round responsibilities.

Working Conditions

Coaching can be a rigorous, high-pressure, demanding occupation. Coaches often face criticism from the general public and media, particularly if their team or one of their athletes performs poorly. The stability of a coaching position often depends on the performance of the team or athlete and, in professional sports, on box office or gate receipts.

Coaches in paid positions often work long, irregular hours and travel extensively. They must work evenings, weekends and holidays when most games and competitions take place. Depending on the sport, they may be required to work indoors or outdoors, sometimes in adverse weather conditions.

Personal Characteristics

Coaches need the following characteristics:

- proven trustworthiness and high moral and ethical standards
- exceptional leadership ability including the ability to instill confidence and foster high standards of sportsmanship
- excellent communication and instructional skills
- good organizational skills.

In addition, they should be:

- physically fit and model an active lifestyle
- highly motivated
- patient
- creative as well as logical thinkers
- confident
- willing to do the work required to keep up to date.

They should enjoy observing and assessing athletes' skills, working with people and directing the work of others.

Educational Requirements

Coaches are often former athletes, especially at the professional level. Other qualification requirements vary from one sport to another and from one level of a sport to another.

Most sport organizations have a formal screening process for coaches. In general, the preferred qualification is NCCP certification (see below) combined with a bachelor's degree in physical education or kinesiology (for more information, see the Kinesiologist occupational profile). However, preferred qualifications vary considerably and prospective coaches are strongly advised to obtain more detailed information from the appropriate provincial sport association of national sport federation.

The **National Coaching Certification Program (NCCP)** is a five level education program that has theory, technical and practical components. Levels one to three provide basic principles of coaching, technical coaching skills and practical evaluation. Levels four and five are for those wanting to coach at the national and international levels.

Coaches of amateur teams (clubs, provincial, national or international) should be qualified through education and practical experience, and have achieved minimum NCCP Certification levels. Even unpaid volunteer coaches may be required to attend specific clinics to earn coaching certification.

Coaches of university or college teams are usually required to have a master's or doctoral (PhD) degree in physical education or kinesiology. Their responsibilities generally include teaching related post-secondary courses.

The **National Coaching Institute - Calgary**, a private vocational school, offers a 32 week National Coaching program leading to a Diploma in High Performance Coaching and NCCP Level 4 certification. Applicants must be high school graduates who are certified at NCCP Level 3. A degree in physical education is recommended.

Employment and Advancement

(section revised JANUARY 2006)

Most coaches are volunteers. Those in paid positions usually work on a contract basis for:

- professional sports teams
- provincial and national amateur sports teams
- post-secondary institutions
- school boards
- sport schools at the high school level
- recreational facilities
- sport clubs
- private athletic clubs.

Coaches may start out as assistant coaches before becoming head coaches. Some go on to become general managers of athletic teams. Others take on coaching and general manager responsibilities at the same time. Coaches also may become professional sport scouts, sport program directors or administrators in national sport federations.

If they have a related degree, coaches can become teachers, sport administrators or coaching consultants. Some coaches work in public relations and marketing.

In Alberta, over 75 per cent of people employed as coaches work in the following industries:

- **Information, Culture and Recreation**
- **Educational Services**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

About 1,400 Albertans are employed in the Coaches occupational group which is expected to grow 1.5 to 2.5 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 20 to 40 **new** positions will be created each year **in addition** to job openings created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

The amount coaches in salaried positions are paid is usually based on years of experience and certification levels, and **varies greatly** among sports and levels within sports. Some volunteer coaches receive an honorarium.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Coaches occupational group working part-time or full-time earned from **$8,000 to $76,300 a year.** The average salary was **$29,700 a year.**

Other Sources of Information

Alberta Sport Recreation Parks and Wildlife Foundation website: www.cd.gov.ab.ca/asrpwf/

Canadian Sport Centre - Calgary website: www.canadiansportcentre.com

Coaching Association of Canada (CAC) website: www.coach.ca

Edmonton Sport Council website: www.edmontonsport.com

Lifesaving Society website: www.lifesaving.org

Skate Canada, Alberta-NWT/Nunavut website: www.skateabnwtnun.com

Related Occupational Profiles

Fitness Instructor
Kinesiologist
Professional Athlete
Sports Official

Related High School Subjects

Community Health; Enterprise and Innovation; Language Arts; Legal Studies; and Physical Education

Related Post-Secondary Fields of Study

Physical Education and Recreation

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Collection Agent

Produced NOVEMBER 2005

Collection agents use various strategies to collect money owed on past due accounts including letter writing, telephone calls and credit management.

NOC Number(s): 1435
Minimum Education: High school diploma
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **M I s**

Duties

Collection agents are employed by businesses, financial institutions, governments and collection agencies to get payments from customers or clients who default on loans, credit card debts or other financial obligations.

Collection agents may have a variety of job titles such as:

- credit adjuster
- bill or claims collector
- collection clerk or officer
- recovery clerk or officer
- receivables control specialist
- accounts receivable analyst
- loan counsellor
- tax collector.

Small companies may hire part-time collection agents or assign the task of collection to a particular employee. Large companies usually hire a number of collection agents or contract a receivables management firm. For accounts that are difficult to collect, businesses may hire legal firms or contract private collection agencies.

Collection agents use tact and diplomacy when collecting overdue accounts to preserve a positive customer relationship with the business. They may use a variety of approaches such as:

- sending persuasive letters
- telephoning debtors or meeting with them to discuss overdue accounts
- arranging a repayment schedule based on the debtor's financial situation if the debtor cannot make a full payment
- using local directories, bureaus, registries and the Internet to locate people (sometimes called skip tracing).

They also may:

- keep records of payments manually or in a computer database
- prepare letters and statements of overdue accounts which are mailed out.

If debtors fail to respond to initial letters, collection agents usually follow up with other letters and phone calls. Most use three standard form letters:

- first a letter of reminder
- then a letter requesting contact
- finally a legal demand for payment.

Collection agents have access to computer databases and elaborate skip tracing methods for locating people who are difficult to find. Collection agencies are usually hired by businesses or organizations who have had no luck collecting on their own and are willing to pay a fee to get the money owed.

Collection agencies usually resolve about 40 per cent of their debts through phone calls and letters. Payments not collected by agencies may be written off and abandoned or, in some circumstances, legal proceedings may be instigated.

Working Conditions

Collection agents work in offices. They may sit for long periods of time working at a computer and using the telephone. Since agents often phone people at home, they may work Saturdays and start later in the morning and work into the evening. Dealing with unpleasant, upset debtors can be stressful.

Personal Characteristics

Collection agents need the following characteristics:

- the ability to negotiate with people courteously and effectively in difficult situations
- a high degree of motivation and initiative
- good communication skills in person and on paper
- the ability to work under stressful conditions, meet deadlines and not be offended by insults
- the flexibility required to respond effectively to the unexpected
- the ability to work in a team environment
- the ability to follow instructions and pay attention to details.

They should enjoy having clear rules and methods guiding their work, speaking with people in person or by telephone, and finding innovative ways to locate debtors and recover liabilities.

Educational Requirements

Most businesses and collection agencies prefer to hire collection clerks who have at least a high school diploma. Some companies hire university or college students to work part-time as collection agents.

Collection agents are usually given on-the-job training. They must become familiar with local and provincial regulations governing collection procedures and learn how to negotiate with debtors. They need:

- investigative skills to locate debtors and their assets
- financial analysis skills to determine a debtor's capacity to pay
- sales skills to persuade debtors to pay the money they owe.

Employment and Advancement

(section revised JANUARY 2006)

Collection agents are employed by many types of businesses including:

- retail and wholesale companies
- banks, credit card companies and other lending institutions
- hospitals
- insurance companies
- leasing firms
- property management companies
- trucking companies
- health clubs
- drilling, welding and other service suppliers
- utility companies
- municipal, provincial and federal governments
- collection agencies.

With experience, collection agents in large organizations may advance to legal collections or supervisory positions. In some financial institutions, collection agent is considered an entry level position from which employees may advance to other positions.

Collection agents are part of the larger National Occupational Classification 1435: Collectors. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Management, Administrative and Other Support Services**
- **Public Administration**
- **Finance, Insurance and Real Estate**
- **Information, Culture and Recreation**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 1,550 Albertans are employed in the Collectors occupational group which is expected to grow 1.3 to 2.3 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 20 to 40 **new** positions will be created each year **in addition** to job openings created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Collection agents' earnings vary considerably depending on their duties and qualifications, and the type of employer. Those who work for hourly wages may earn from minimum wage to $25 an hour plus bonuses or commissions on the total dollars collected.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Collectors occupational group working part-time or full-time earned from **$19,900 to $106,500 a year.** The average salary was **$31,000 a year.**

Other Sources of Information

Credit Institute of Canada website: www.creditedu.org

Related Occupational Profiles

Credit/Loans Manager
Utility Clerk

Related High School Subjects

Financial Management; Language Arts; and Legal Studies

Related Post-Secondary Fields of Study

Clerical and Administrative Support

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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College, Technical or Vocational Instructor

Produced NOVEMBER 2005

College, technical and vocational instructors provide instruction to adults in a wide variety of subject areas including vocational, technical, business or services training, trades, academic upgrading and university transfer courses.

NOC Number(s): 4131
Minimum Education: 2 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: I D S

Duties

College, technical and vocation instructors teach adult students of all ages and academic backgrounds. Some students may have very little formal education; others may be experienced individuals seeking vocational upgrading or retraining.

Duties vary depending on the type and size of post-secondary institution, the subject area and the level of instruction. In general, however, instructors:

- develop curriculum
- research and prepare lessons
- use instructional techniques such as lectures, demonstrations, laboratory work, hands-on training, case studies, independent or group projects, field assignments, field placements and multimedia technologies (including online learning)
- provide individualized instruction and tutorial or remedial instruction
- prepare, administer and mark student exams
- evaluate student performance and assignments
- consult with students regarding specific academic or vocational concerns
- maintain and submit program or student records.

Instructors also must keep abreast of current developments and changes in their fields by maintaining contact with industrial or business sectors. Attending workshops, seminars and refresher courses is a necessary part of the job.

Some instructors have assistants who help prepare materials, set up laboratory and audio-visual equipment, gather research data, mark assignments and examinations, and perform other non-instructional duties.

College instructors may teach a broad range of courses, ranging from academic upgrading to applied degree programs, in fields such as:

- communications studies
- the arts
- the sciences
- community and health services
- business and computers
- technical, vocational and trades training
- general interest programs.

Instructional responsibilities and required qualifications vary with the programs taught. For example, instructors who teach university transfer programs generally have instructional responsibilities similar to those of lecturers who teach undergraduate programs at universities. Career certificate programs are usually taught by instructors who have industry experience in specific fields.

Technical institute instructors provide technically-oriented instruction to adult students involved in studies relating to:

- business (accounting management)
- commercial and service occupations
- engineering technologies

- medical and health sciences
- life resources
- media and information technologies
- mechanical, manufacturing and building sciences
- industrial and commercial trades (including apprenticeship courses).

Technical institutes provide technical in-school training for over 90 per cent of Alberta's apprentices as well as academic upgrading for students lacking the entrance requirements for further technical studies.

Vocational college instructors provide instruction in programs such as:

- basic literacy
- academic upgrading
- short, intensive vocational training programs relating to business, health, trades and service fields.

These programs are designed to give unemployed or under-employed adults the academic and employment skills they need to enter or re-enter the work force. Instructors may be teaching students who:

- come from culturally, socially or educationally disadvantaged backgrounds
- have decided to upgrade or retrain
- are new Canadians and require English proficiency (for more information, see the English as a Second Language Instructor - Adults occupational profile).

Working Conditions

Most college, technical and vocational instructors work in classroom, office and laboratory environments. Generally, facilities are well equipped and enrolments are limited in size.

Personal Characteristics

College, technical and vocational instructors need the following characteristics:

- good oral and written communication skills
- a desire to share knowledge with others and meet adult student needs
- enthusiasm for their subject or skill area
- respect for people from diverse backgrounds
- the ability to identify with students' aspirations and offer sound advice.

They should enjoy co-ordinating information in innovative ways to prepare teaching materials, supervising and evaluating student progress, and helping others achieve their goals.

Educational Requirements

Most college, technical and vocational instructors have related post-secondary education. Specific educational requirements vary depending on the position:

- College instructors usually have graduate degrees (master's or PhD degrees).
- Instructors responsible for teaching academic upgrading usually have at least a bachelor's degree. An Alberta teaching certificate or a certificate, diploma or degree in adult education are definite assets.
- Instructors of technical, trade or vocational programs should be experts in their particular fields. Instructors in technical institutions normally hold professional or technical certification and may be required to have a license for their particular field of expertise.
- Most instructors have extensive work experience as well as formal education qualifications.

Employers usually provide staff development programs about instructional methods and teacher-student relations for instructors who do not have formal teacher training.

In Alberta, the following post-secondary institutions offer programs specifically in adult education:

- **Mount Royal College** in Calgary offers a nine course Adult Educator Seminar Series program through Continuing Education. Applicants must be at least 18 years of age.
- At the **University of Alberta**, the Faculty of Education offers a two year Master of Education (M.Ed.) degree program in adult and higher education. The entrance requirements are successful related experience and a bachelor's degree with a grade point average (GPA) of at least 3.0/4 in the last two undergraduate years. The Faculty of Extension offers a part-time (250 hour) Adult and Continuing Education (CACE) program. A high school diploma is recommended but not required, and a maximum of 50 hours of advanced standing may be awarded for prior learning or for transfer credits.

- At the **University of Calgary**, the Centre for Distance Learning offers a two year M.Ed. degree program in adult, community and higher education. The entrance requirement is a suitable bachelor's degree with a GPA of 3.0/4 in the last two years of study and two years of related experience. The Faculty of Continuing Education offers a seven course Adult Learning program. Applicants are expected to have volunteer or professional experience as an adult educator.

Bachelor's degree programs in a variety of appropriate fields are offered by universities and colleges throughout Alberta. In general, the admission requirements for these programs include a high school diploma with a competitive average (ranging from 60 to 80 per cent) in English Language Arts 30-1 or English 30 and four other approved 30 level subjects. For specific requirements, please consult institution calendars or websites. For information about Bachelor of Education (B.Ed.) programs, see the Secondary School Teacher occupational profile.

Post-secondary institutions throughout the province offer university transfer programs that allow students to apply up to two years of course work toward university bachelor's degree programs. It is the student's responsibility to ensure that the courses they choose to take will be accepted for credit at the institution to which they wish to transfer.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

(section revised JANUARY 2006)

College, technical and vocational instructors are employed in:

- public and private colleges
- private vocational schools
- institutes of technology
- religious colleges.

In all adult learning facilities, instructors with experience may advance to department or program head positions with increased supervisory and administrative duties. There are, however, relatively few administrative positions available compared to the number of classroom teaching positions.

College, technical and vocational instructors are part of the larger National Occupational Classification 4131: College and Other Vocational Instructors. In Alberta, over 75 per cent of people employed in this classification work in the **Educational Services** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Educational Services industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 11,150 Albertans are employed in the College and Other Vocational Instructors occupational group which is expected to grow 1.6 to 2.6 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 170 to 290 **new** positions will be created each year **in addition** to job openings created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Salaries for instructors are usually based on a grid system that takes into account their years of related training and years of experience in the field. Positions are about equally divided between contract positions and sessional or permanent positions that offer benefits.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the College and Other Vocational Instructors occupational group working part-time or full-time earned from **$13,600 to $76,000 a year.** The average salary was **$48,200 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Related Occupational Profiles

Career and Technology Studies Teacher
English as a Second Language Teacher - Adults
Private Trainer/Facilitator
Secondary School Teacher
University Professor

Related High School Subjects

Communication Technology; Language Arts; Mathematics; and Science

Related Post-Secondary Fields of Study

Agriculture and Related Technologies; Aviation; Business, Management and Administrative Studies; Communications; Computer and Information Technology; Driver Training; Education and Library Studies; Engineering and Science Technologies; Engineering, Architecture and Related Studies; Environment, Forestry and Related Studies; Fine Arts and Performing Arts; Health Care and Medical Sciences; Human Ecology, Fashion and Food Sciences; Humanities and Languages; Mathematics; Personal and Food Services; Physical Education and Recreation; Sciences; Social Sciences, Law and Religious Studies; Social, Community and Protective Services; and Trades, Industrial and Related Training

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For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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OCC info Alberta Occupational Profiles

Alberta Human Resources and Employment

Combined Laboratory and X-Ray Technologist

Produced FEBRUARY 2005

Combined laboratory and x-ray technologists conduct routine medical laboratory tests, perform radiography and electrocardiograms and set up, clean and maintain related equipment.

NOC Number(s): 3211.1, 3215.1
Minimum Education: 2 years post-secondary education/training
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: **M I O; O M i**

Duties

In general, combined laboratory and x-ray technologists:

- collect, prepare and analyze patient samples
- perform venipuncture (take blood from vein in arm) and capillary puncture (take blood from finger/heel in children)
- ensure quality control and lab safety while performing procedures in hematology, coagulation, urinalysis, clinical chemistry and point-of-care testing (e.g. glucose meter readings)
- explain radiography procedures to patients and answer questions
- monitor paitents
- correctly position patients and equipment
- operate diagnostic imaging equipment to produce quality images that assist in diagnosis
- recognize anatomical structures radiographed
- follow radiation protection practices, regulations and philosophy to reduce risk to patients, staff and visitors
- perform electrocardiograms and determine if tracings are technically accurate
- provide general patient care and transfer patients as needed
- perform administrative and clerical duties
- insure that equipment and instruments are working properly
- maintain equipment.

Combined laboratory and x-ray technologists work closely with other medical technologists, health record technicians, nurses, physicians and other health care professionals.

Working Conditions

Combined laboratory and x-ray technologists work primarily in rural hospitals and clinics. In hospitals, they work shifts and are sometimes on call. Safety precautions are required to avoid back strain and repetitive stress injuries, and reduce the risk of infection or injury when working with infectious patients, samples or hazardous chemicals.

This is a physically demanding occupation. Combined laboratory and x-ray technologists are on their feet for most of their shift. They may be required to help patients move and routinely handle equipment weighing up to 10 kilograms. If a patient is unconscious or otherwise unable to move, technologists ask other health care workers for help moving the patient.

Personal Characteristics

Combined laboratory and x-ray technologists need the following characteristics:

- a sense of responsibility and a high degree of integrity
- sensitivity to the needs of ill and injured people
- good health with no predisposition to back or leg problems
- excellent communication and interpersonal skills
- good organizational skills

- the ability to do detailed work and maintain a high level of accuracy
- good colour and form perception (to study blood cells, etc.)
- the ability to work independently as well as in a team environment.

They should enjoy compiling test results and patient data, setting up and operating sophisticated medical equipment, and working with the public and other health care professionals.

Educational Requirements

In Alberta, the **Northern Alberta Institute of Technology (NAIT)** in Edmonton offers a two year Combined Laboratory and X-Ray Technology program. The program includes 34 weeks of clinical practicum at rural hospital sites throughout Alberta. The minimum entrance requirement is a high school diploma or equivalent with at least 60 per cent in English 30, Math 30 (or Pure Math 30), Chemistry 30, Biology 30. However, this is a quota program so higher marks are generally required to gain admission. A career investigation report is required.

NAIT also offers a one year Medical Laboratory Assisting certificate program. The entrance requirement is a high school diploma with at least 60 per cent in English 30 or 33, Math 30 or 33, Chemistry 30, Biology 30 plus keyboarding or a typing course at a Grade 10 level or equivalent.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

For more information about programs in laboratory technology and x-ray technology, see the Medical Laboratory Technologist and Radiological Technologist occupational profiles.

Other Requirements

Under Alberta's Health Disciplines Act and Combined Laboratory X-Ray Technician Regulation, only registered members of the Alberta College of Combined Laboratory and X-Ray Technicians/Technologists (ACCLXT) may call themselves Registered Combined Laboratory X-Ray Technicians or Technologists. Registered members provide health services listed in the Regulation. Laboratory workers who are not registered (regulated) may perform laboratory activities.

Employment and Advancement

(section revised JANUARY 2006)

Most combined laboratory and x-ray technologists are employed in small, often rural, hospitals that have 15 to 60 beds. Some are employed in larger hospitals, health care centres, private or public clinics.

Combined laboratory and x-ray technologists work in the **Health Care and Social Assistance** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Health Care and Social Assistance industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

The occupation is expected to grow at an above average rate from 2005 to 2010 in Alberta.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans working part-time or full-time in the:

- Medical Laboratory Technologists and Pathologists' Assistants occupational group earned from **$25,200 to $54,800 a year.** The average salary was **$47,200 a year.**
- Radiological Technologists occupational group earned **up to $75,200 a year.** The average salary was **$53,100 a year**

For information about current collective agreements in the public and not-for-profit sectors, see the Health Sciences Association of Alberta (HSAA) website.

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta College of Combined Laboratory and X-Ray Technicians (AACLXT) website: www.acclxt.ca

Health Sciences Association of Alberta (HSAA) website: www.hsaa.ca

Related Occupational Profiles

Diagnostic Medical Sonographer
Medical Laboratory Technologist
Radiological Technologist

Related High School Subjects

Communication Technology; Information Processing; Language Arts; Mathematics; Physical Education; and Science (Biology; Chemistry; and Physics)

Related Post-Secondary Fields of Study

Health Care and Medical Sciences

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Commercial Diver

Produced AUGUST 2005

Commercial divers work in underwater construction and salvage operations inland (in rivers, lakes, canals and open roadsteads) or offshore (in harbours and oceans). They may participate in search and recovery operations or marine research, or do inspection, maintenance and repair work related to offshore oil and gas production.

NOC Number(s): 7382
Minimum Education: 1 year post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **O I M**

Duties

Commercial divers work with specialized equipment such as diving helmets, underwater cutting torches, underwater welding equipment, wet-suits, dry-suits, hot water heated suits, hyperbaric chambers, full face masks and air compressors. They perform a wide variety of tasks under water:

- install and repair underwater pipelines which may involve laying pipes weighing up to 40 tons (lowered by crane off a barge) and cementing over small cracks in concrete pipes
- salvage wrecked ships and cargo which may involve using pneumatic and hydraulic tools and preparing and placing explosive charges
- inspect underwater structures which may involve using closed circuit television, still photography and non-destructive testing equipment as well as visual inspection
- repair underwater structures which may involve wet welding or dry habitat welding and the fabrication of jigs and supports
- perform oilfield work which may involve inspecting, maintaining and repairing drilling rigs and platforms, recovering subsea equipment and installing production systems (such as loading buoys and underwater pipelines)
- perform other marine construction work such as inspecting and repairing floating drydocks, breakwaters, piers and marine ways
- construct, repair and inspect dams
- inspect, clean and repair piping and valves in ponds, under cooling towers, and in power generating plants, refinery and chemical plants, and water storage facilities
- locate and recover submerged objects or bodies (sometimes under ice)
- work in contaminated environments such as sewage treatment facilities, taking bottom samples and inspecting and repairing underwater systems or facilities
- repair bridge foundations and maintain intakes and exhausts associated with power plants, municipal facilities or industrial plants.

Working Conditions

Divers involved in deep diving operations (over 165 feet) often use breathing mixtures other than air, live in hyperbaric chambers for up to a month and use diving bells, small manned submarines, atmospheric dive suits or other systems.

Commercial diving can be hazardous. Divers must observe safety precautions to avoid pressure-related injuries. Working underwater near heavy construction and oil drilling operations can present other types of dangers such as near zero visibility, waves, currents, intakes and exhausts, confined spaces and ice. Working in these kinds of environments can be stressful.

Divers may be required to lift items such as diving equipment that weigh over 25 kilograms.

Personal Characteristics

Commercial diving is mentally and physically demanding. Divers need the following characteristics:

- physical stamina
- emotional stability
- a strong mechanical aptitude
- the ability to work with written instructions and interpret blueprint information
- writing skills to report on findings and make recommendations
- organizational skills to prepare for dives
- a willingness to learn.

They should enjoy operating underwater equipment, solving problems by experimenting, and taking an organized, methodical approach to their work.

Educational Requirements

Divers need diving skills and a good understanding of the physical and physiological effects of pressure such as burst lung syndrome and decompression sickness. Because diving is essentially a way to get to work, they also need:

- other work-related skills (e.g. a background in welding, construction carpentry, mechanics, rigging or non-destructive testing)
- an understanding of the mechanics of hydraulics and compressed air
- the ability to adapt tools and fittings for underwater tasks.

The **Diver Certification Board of Canada (DCBC)** offers certification to offshore and inshore commercial divers who meet the requirements of the appropriate section of the Canadian Standards Association (CSA) Competency Standard for Diving Operations (CSA Standard Z275.4). CSA Standards Z275.1, Z275.2 and Z275.5 address hyperbaric facilities, occupational safety for diving operations and diver training. For a current list of accredited commercial diver training organizations in Canada, see the DCBC website.

Employment and Advancement

Diving equipment is very expensive so commercial divers often work for diving contractors who provide all the necessary equipment. They may specialize in work related to:

- police operations
- scientific research
- underwater/marine construction
- salvage and inspection
- off-shore oil and gas activities
- seafood harvesting
- aquaculture
- movie production.

Some divers are self-employed.

Advancement opportunities are limited. With additional training, divers may become dive supervisors, saturation technicians, inspectors, welders, medical technicians or diving consultants.

In Alberta, most people employed as commercial divers work in the following industries:

- **Construction**
- **Management, Administrative and Other Support Services**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Very few Albertans are employed in the Commercial Divers occupational group.

Salary

Factors such as membership in a union, ownership of the equipment being used, the depth of the dive and working hazards usually determine divers' pay scales. Therefore, incomes may vary widely from one diver to another and from one year to another.

Other Sources of Information

Canadian Association of Diving Contractors (CADC) website: www.cadc.ca

Canadian Standards Association (CSA) website: www.csa.ca

Diver Certification Board of Canada (DCBC) website: www.divercertification.com

Related Occupational Profiles

Carpenter
Materials Engineering Technologist
Welder

Related High School Subjects

Fabrication Studies; Language Arts; Mathematics; Mechanics; Physical Education; and Science (Physics)

Related Post-Secondary Fields of Study

Trades, Industrial and Related Training

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Communication Technician

Apprenticeship and Industry Training

Produced FEBRUARY 2006

Communication technicians install, repair and maintain telecommunication systems.

NOC Number(s): 7246
Minimum Education: Apprenticeship Trade - Grade 12
Employment Outlook: Employment turnover plus below average occupational growth in Alberta
Interests: O I M

Duties

In general, communications technicians install, maintain, remove or repair wiring networks, consumer communication equipment, switchboards and specialized equipment such as intercoms, fax machines, computer networks and electronic key systems. They also maintain and repair various types of microwave, television, toll and switching equipment used to provide local or long distance service.

Working Conditions

Working conditions vary greatly for communication technicians depending on the specific duties involved. Some work primarily outdoors, some primarily indoors. Overtime is required during emergencies. Shift work may also be required.

There is some risk of injury due to electrical shock or falling.

Personal Characteristics

Communication technicians need the following characteristics:

- mechanical ability
- analytical ability
- normal colour vision for working with colour-coded wiring
- good customer service skills
- the ability to keep up to date with changes in technology.

They should enjoy doing precison work which sometimes requires creativity.

Educational Requirements

Communication technicians must be:

- competent in the use of test instruments and understand their capabilities and limitations
- familiar with different circuit configurations and components
- capable of using test procedures to locate faults and isolate defective components.

To work in Alberta, communication technicians must be ONE of the following:

- registered apprentices
- certified journeymen
- working for an employer who is satisfied that they have the skills and knowledge expected of certified journeymen
- self-employed.

To **register** with **Alberta Apprenticeship and Industry Training**, apprentices must:

- have at least an Alberta Grade 12 education with Math 30 or 33, Pure Math 30 or Applied Math 30 (or equivalent) or pass an entrance exam
- find a suitable employer who is willing to hire and train an apprentice. Most employers prefer to hire high school graduates and may select apprentices from among their current employees. Courses in math and physics are particularly important.

The **term of apprenticeship** is four years (four 12-month periods) that include a minimum of 1,500 hours of on-the-job training and eight weeks of technical training each year. High school students can become apprentices and gain credits toward apprenticeship training and a high school diploma at the same time through the Registered Apprenticeship Program (RAP).

Applicants who have related training or work experience may be eligible for credit or certification.

Technical training is arranged by Alberta Apprenticeship and Industry Training and is currently offered at:

- the Northern Alberta Institute of Technology (NAIT) in Edmonton and by mobile delivery (check with NAIT for delivery location)
- the Southern Alberta Institute of Technology (SAIT) in Calgary.

Any apprentice currently registered in the **Communication Electrician-Construction branch** must contact Alberta Apprenticeship and Industry Training for the technical training requirements.

Outside the apprenticeship program, the following post-secondary institutions offer related training:

- The **Northern Alberta Institute of Technology (NAIT)** in Edmonton offers a two year Telecommunications Engineering Technology diploma program. The entrance requirement is a high school diploma or equivalent with English 30 or 33, one of Physics 30, Chemistry 30 or Science 30 and Pure Math 30 or successful completion of Transitional Mathematics 101 or at least 65 per cent in Algebra 35.
- The **Southern Alberta Institute of Technology (SAIT)** in Calgary offers a two year Telecommunications Technology diploma program. The entrance requirement is a high school diploma with Pure Math 30 or Math 30, English 30 or 33, English Language Arts 30-1 or 30-2 and a minimum 20 level science.

Pre-employment programs for prospective apprentices and continuing education programs for journeymen may be offered on an as needed basis by the institution(s) listed above or other schools.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

Communication technicians are employed by:

- telecommunication companies such as Telus, Northwestel and Unitel Telecommunications
- smaller companies that install, maintain, sell, rent or lease communications equipment, subcontract for the larger telecommunications companies, or install private communications systems.

Experienced communication technicians may advance to supervisory positions, change to other craft areas or retrain and transfer to other departments such as sales or engineering. Alberta certified journeyman communication technicians who have the supervisory or management skills required by industry may apply for an Achievement in Business Competencies Blue Seal by contacting Alberta Apprenticeship and Industry Training.

Communication technicians are part of the larger National Occupational Classification 7246: Telecommunications Installation and Repair Workers. In Alberta, over 75 per cent of people employed in this classification work in the **Information, Culture and Recreation** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Information, Culture and Recreation industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 1,800 Albertans are employed in the Telecommunications Installation and Repair Workers occupational group which is expected to grow 0.4 to 1.4 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover. (**Note**: Since communication technicians form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for communication technicians.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Apprentice communication technicians earn at least 40 per cent of the journeyman wage rate in their place of employment in the first year, 50 per cent in the second, 60 per cent in the third and 75 per cent in the fourth. According to the Alberta Provincial Apprenticeship Committee for this trade, journeyman wage rates vary, but generally range from **$17 to $23 an hour plus benefits** (2004 estimate).

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Telecommunications Installation and Repair Workers occupational group working part-time or full-time earned from **$21,400 to $63,100 a year.** The average salary was **$40,200 a year.**

Other Sources of Information

Alberta Apprenticeship and Industry Training website: www.tradesecrets.org

Post-secondary institution calendars or websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Construction Industry "Trade Up!" website: www.careersconstruction.com

Calgary Construction Association website: www.cca.cc

Related Occupational Profiles

Electrician
Power Lineman
Power System Electrician
Telecommunications Engineering Technologist

Related High School Subjects

Electro-Technologies; Language Arts; and Mathematics

Related Post-Secondary Fields of Study

Trades, Industrial and Related Training

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Community Health Nurse

Produced SEPTEMBER 2004

Community health nurses provide professional nursing services for individuals, families, communities and groups in a variety of settings.

NOC Number(s): 3152.3
Minimum Education: 3 years post-secondary education/training
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: **D M D**

Duties

Community health nurses' duties vary considerably from one job to another and may vary from one assignment to another in the same job. In general, they:

- develop and deliver health promotion and education programs
- facilitate the development of support groups and community solutions to local health problems
- deliver preventive programs such as immunization or screening programs for tuberculosis or breast cancer
- visit and provide health care services to new mothers, elderly patients and others needing care in their homes
- supervise and assist in the ongoing education of personal care attendants and other care givers
- assist in the control of communicable disease outbreaks
- ensure continuity of care as clients move from one part of the health care system to another
- provide health support and counselling services for people in crisis and help them access appropriate resources
- assist in the development of public health policies.

Community health nurses may work with a wide variety of people or specific groups in the community. For example, they may work primarily with:

- children (newborns, preschool, school age, adolescents)
- children who have long term disabilities
- families
- elderly people in good health
- elderly people whose ability to function independently is diminishing
- disadvantaged individuals or groups
- community organizations (schools, churches, housing and social service agencies)
- clients needing care following discharge from hospital
- palliative patients who have chosen to die at home
- individuals who have mental health problems.

Working Conditions

Community health nurses counsel and advise clients over the telephone and may travel to see clients in their homes. Most work weekday hours. However, evening and weekend work is often required.

Community health nurses face the same occupational hazards as other nurses (exposure to infectious diseases and chemicals, back injuries and muscle strains from moving patients). They also must work relatively independently and deal with issues of personal safety because they work outside the controlled environment of a hospital. Those who work in isolated communities may be the only health professionals who live in the community.

Personal Characteristics

Community health nurses need the following characteristics:

- flexibility and adaptability
- physical and emotional stamina

- good communication skills and a sense of humour
- problem-solving and critical thinking skills
- the ability to work independently as well as in a team environment
- the ability to work well with individuals, families and groups from diverse social and cultural backgrounds
- the ability to motivate people
- the ability to react quickly and effectively to unexpected or unusual situations
- the ability to supervise para-professional and non-professional staff.

They should enjoy advising individuals and groups about promoting and maintaining good health, taking a methodical approach to compiling information and administering treatments, and directing the work of others.

Educational Requirements

In Alberta, registered nurse status requires a **diploma or bachelor's degree in nursing**. The following post-secondary insitutions offer approved nursing education programs:

- **Athabasca University**
- **Grande Prairie Regional College**
- **Grant MacEwan College** in Edmonton
- **Keyano College** in Fort McMurray
- **Lethbridge Community College**
- **Medicine Hat College**
- **Mount Royal College** in Calgary
- **Red Deer College**
- **University of Alberta** in Edmonton
- **University of Calgary**
- **University of Lethbridge**.

These schools offer collaborative programs to enable students to graduate with a bachelor's degree in nursing. Degree programs may allow students to exit at the diploma level.

Admission requirements vary but generally include a high school diploma with an overall average of at least 60 or 65 per cent in:

- English 30
- Biology 30
- Chemistry 30 (some institutions will accept Science 30)
- Math 30 or Pure Math 30 (some institutions will accept Math 31, Physics 30, or at least 60 per cent in Math 33 or Applied Math 30)
- a fifth 30-level course (Social Studies 30 or a 30-level language recommended).

Admission to quota programs is competitive so higher marks may be required to gain admission. For current information on programs and mature student admission policies, please check post-secondary calendars or websites.

Continuing education programs are often offered on an as needed basis.

Other Requirements

(section revised OCTOBER 2004)

Under the current legislation governing registered nurses in Alberta, the Nursing Profession Act and associated regulations, only registered members of the Alberta Association of Registered Nurses (AARN) may call themselves or practice as a Registered Nurse.

Employment and Advancement

(section revised JANUARY 2006)

Community health nurses are employed by regional health authorities, organizations such as the Victorian Order of Nurses (VON), charitable organizations and churches, and businesses that provide services related to health care. Some self-employed community health nurses work on a contract basis.

Advancement for community health nurses may take the form of specializing in a particular type of health care service (e.g. palliative care, health education, communicable disease control, genetic counselling, teen sexual health, community development) or in serving the needs of a particular client population (e.g. seniors, school children).

Community health nurses are part of the larger National Occupational Classification 3152: Registered Nurses. In Alberta, most people employed in this classification work in the **Health Care and Social Assistance** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Health Care and Social Assistance industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 27,150 Albertans are employed in the Registered Nurses occupational group which is expected to grow 3.3 to 4.3 per cent each year from 2005 to 2010 in Alberta. It is forecasted that over 600 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since community health nurses form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for community health nurses.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Salaries for community health nurses vary considerably depending on the employer, location and the nurse's hours, qualifications and responsibilities.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Registered Nurses occupational group working part-time or full-time earned from **$15,700 to $75,500 a year.** The average salary was **$51,800 a year.**

2004 salaries for registered nurses who work full-time (1921 hours a year) and are members of United Nurses of Alberta start at $50,580 per year.

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Association of Registered Nurses (AARN) website: www.nurses.ab.ca

Canadian Federation of Nurses Unions (CFNU) website: www.nursesunions.ca

Canadian Nurses Association (CNA) website: www.cna-nurses.ca

United Nurses of Alberta (UNA) website: www.una.ab.ca

Related Occupational Profiles

Community Health Representative
Gerontological Specialist
Licensed Practical Nurse
Nurse Practitioner
Occupational Health Nurse
Psychiatric Nurse
Public Health Inspector
Registered Nurse
Respiratory Therapist

Related High School Subjects

Communication Technology; Community Health; Language Arts; Mathematics; Physical Education; and Science (Biology; and Chemistry)

Related Post-Secondary Fields of Study

Health Care and Medical Sciences

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Community Health Representative

Produced APRIL 2005

Community health representatives promote wellness, the protection of health and the prevention of injury and illness in community settings.

NOC Number(s): 4212
Minimum Education: 1 year post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: S M I

Duties

Community health representatives work with others in health care teams to improve and maintain the spiritual, physical, intellectual, social and emotional well being of individuals, families and their communities. They provide services in one or more of the following areas:

- health promotion and injury prevention
- client and community advocacy
- environmental (public) health
- cultural liaison.

CHRs involved in health promotion and injury prevention:

- organize health education workshops
- design or help create culturally appropriate education resources
- conduct home visits to build relationships with community members and provide information and support
- provide health promotion and injury prevention services such as prenatal classes, elders' luncheons or health fairs
- help prevent and control the spread of communicable diseases (e.g. immunization promotion, outbreak management)
- conduct screening programs
- monitor clients who have chronic diseases.

CHRs involved in client and community advocacy:

- conduct home and hospital visits
- refer clients and families to appropriate resources and services, and help them overcome any access barriers
- recommend improvements regarding the delivery of health care
- act as a liaison and collaborate with community leaders, agencies and service providers
- help implement and evaluate community health plans
- co-ordinate or facilitate community health initiatives.

CHRs who work in First Nations:

- monitor the safety of the community's water supply
- provide information about personal hygiene, safe food handling, safe water quality and waste disposal
- participate in the investigation of communicable disease outbreaks and provide information, screening and follow-up
- participate in housing inspections, emergency preparedness and disaster planning, and planning and monitoring special events (e.g. PowWows, rodeos).

CHRs involved in cultural liaison may translate language and describe routine medical processes and procedures for clients, or interpret cultural practices or beliefs for health care professionals.

In all areas, CHRs must document their activities. For example, they record observations in client health records, complete water bacterial reports, prepare monthly reports and participate in the development of community health workplans.

In urban settings, community health representatives generally do not provide services that are already provided by other health care professionals (e.g. assessing, screening, montioring water safety).

In isolated communities, community health representatives provide temporary emergency care, consult with health care professionals regarding emergency situations or escort patients to the appropriate health care facilities.

Working Conditions

Community health representatives work in homes and community facilities including schools and health care centres, primarily in First Nations communities and Metis settlements. They generally work standard office hours but may be required to respond to emergency situations or attend evening or weekend meetings.

The work can be stressful in emergency situations and when people have conflicting expectations.

Personal Characteristics

Community health representatives need the following characteristics:

- good physical and mental health
- emotional maturity
- an interest in community work, particularly the preventative and educational aspects of health care
- good oral and written communication skills
- the ability to relate well to people of all ages, individually and in groups
- the ability to work with little supervision
- the ability to keep client information confidential.

They should enjoy helping people in the community, gathering information and maintaining records, and implementing innovative health programs.

Educational Requirements

(section revised NOVEMBER 2005)

Community health representatives must have related post-secondary education and a valid driver's license.

In Alberta, the following post-secondary institutions offer directly related education programs:

- **Kevano College** in Edmonton/St. Alberta offers a one year Community Wellness Worker certificate program. The entrance requirement is a high school diploma or equivalent with English Language Arts 30-1 (or English 30) or at least 60 per cent in ELA 30-2 (or English 33).
- **Portage College** in Lac La Biche offers a 36 week Community Health Representative certificate program. The program includes 24 weeks of instruction and 12 weeks of field work at the student's local health unit or centre. The entrance requirement is Grade 12 or equivalent. All applicants must participate in an admissions interview, complete a basic admissions test, have up-to-date immunizations, submit an approved fieldwork letter, and have a valid Alberta driver's license. Graduates receive 30 credits towards the Bachelor of Professional Arts - Human Services at Athabasca University.

For current information about the program and mature student admission policies, please check the Portage College calendar or website.

Employment and Advancement

(section revised JANUARY 2006)

Most community health representatives are employed by First Nations bands or regional health authorities, primarily in smaller communities. A few are employed in urban areas by community agencies or regional health authorities.

With additional education, community health representatives may move into related occupations. For example, graduates of the Community Health Representative program are eligible for preferred entry into Nechi Institute addictions counselling programs (for more information, see the Addictions Counsellor occupational profile).

Community health representatives are part of the larger National Occupational Classification 4212: Community and Social Service Workers. In Alberta, over 75 per cent of people employed in this classification work in the **Health Care and Social Assistance** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Health Care and Social Assistance industry)

- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 9,600 Albertans are employed in the Community and Social Service Workers occupational group which is expected to grow 1.7 to 2.7 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 160 to 260 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since community health representatives form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for community health representatives.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Community and Social Service Workers occupational group working part-time or full-time earned from **$14,100 to $104,900 a year**. The average salary was **$27,800 a year**.

Salaries vary from one community and employer to another but, in general, community health representatives earn about **$28,000 per year (2005 estimate)**.

For information about current collective agreements in the public and not-for-profit sectors, see the Health Sciences Association of Alberta (HSAA) website.

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Health Sciences Association of Alberta (HSAA) website: www.hsaa.ca

Related Occupational Profiles

Aboriginal Liaison
Addictions Counsellor
Community Health Nurse
Life Skills Coach
Mental Health Worker
Rehabilitation Practitioner
Social Worker

Related High School Subjects

Communication Technology; Community Health; Language Arts; and Physical Education

Related Post-Secondary Fields of Study

Social, Community and Protective Services

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Composer

Produced MAY 2003

Composers create and write a wide variety of original music (e.g. symphonies, operas, ballet scores, musical theatre scores, jazz or rock pieces). They also write music for commercial mediums, including advertising jingles and film soundtracks.

NOC Number(s): 5132.2
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **I M d**

Duties

Composers often develop a unique style of their own. They may, however, produce music in another style or be commissioned to compose music for a special occasion (e.g. a live dance performance, a new symphony or a film/television soundtrack). Further, their pieces vary in length and difficulty, ranging from lengthy film scores and symphonies to short, 30-second jingles for radio commercials.

Writing film and television scores involves spending time studying the film, and possibly the script, to see how and where the music will best fit in to create the desired effect or mood. Increasingly, composers are using computers and synthesizers to produce professional music scores, to orchestrate and to create new arrangements.

Working Conditions

Most of the time, composers work alone. Their working environments and hours of work vary considerably. They may work closely with others (e.g. arrangers, orchestrators, copyists) to complete final scores, or with performers in rehearsals and recording sessions. Film and television composers work with producers or directors to define the nature and placement of the music.

Personal Characteristics

Composers need the following characteristics:

- musical talent and creativity
- tremendous determination and perseverance (getting one's music published or performed can be a long process).

They should enjoy inventing melodic, harmonic and rhythmic structures to express ideas and emotions, and playing musical instruments.

Educational Requirements

(section revised JANUARY 2006)

To succeed, composers must:

- be able to play at least one musical instrument
- understand the range, sound and capability of a variety of instruments
- understand how music is put together harmonically, melodically, rhythmically and textually
- be able to blend various instrumental sounds together to produce desired harmonies or to create special effects
- be able to use musical notation to express their ideas.

Most composers start their musical training at an early age. In addition to playing one or more instruments (usually the piano or a string instrument), they must have an extensive knowledge of music theory. Some composers also study other languages, such as Italian, French or German that are used in classical music.

For composers of concert music, developing a unique style is crucial. This requires listening to as much music as possible, studying musical scores from various musical styles, experimenting and gaining experience.

Post-secondary education in music provides excellent training and exposure to different musical styles. Most serious composers pursue further studies at a university or music conservatory. Some apprentice with a recognized, accomplished composer as part of their post-graduate training.

Popular music (e.g. country, rock) composers often do not have extensive formal training (for related information, see the Songwriter occupational profile). They may study alone, at a music conservatory or a college, or with other accomplished musicians.

In Alberta, the following post-secondary institutions offer music programs:

- **Alliance University College** in Calgary offers a four year BA in Music. The entrance requirement is five senior matriculation level courses including English and math with an minimum overall average of 60 per cent.
- **Banff Centre for the Arts** offers intensive workshops with world-class musicians and conductors. Applicants must submit a portfolio, project description and resume. An audition tape may be required. The entrance requirement is five senior matriculation level courses including English and math with an minimum overall average of 60 per cent.
- **Canadian Nazarene University College** in Calgary offers a three and four year BA in Music. The entrance requirement is a high school diploma with a minimum average of at least 60 per cent in five Grade 12 subjects including English, and math or a second language.
- **Canadian University College** in College Heights offers a three and four year BA in Music. The entrance requirement is a high school diploma with English 30 and at least three other 30-level courses.
- **Concordia University College of Alberta** in Edmonton offers a three year degree program in Music. The entrance requirement is an average of at least 60 per cent in English 30 and four other appropriate Grade 12 subjects.
- **Gardner College - A Centre for Christian Studies** in Camrose offers a two year Music Performance diploma program. The entrance requirement is a high school diploma or equivalent with English 30 or 33.
- **Grande Prairie Regional College** offers a two year Music Acoustic diploma program. The entrance requirement is a high school diploma with English 30, Music 30 and Grade 2 conservatory music theory (or equivalent). A placement exam and an audition are required.
- **Grant MacEwan College** in Edmonton offers a two year Music diploma program with specializations in performance, recording arts and writing. The emphasis in this program is on jazz and commercial music. The entrance requirement is a high school diploma or equivalent.
- **Keyano College** in Fort McMurray offers one year certificate and two year diploma programs in Music. The entrance requirement is a high school diploma with English 30 or 33 and an audition.
- **The King's University College** in Edmonton offers three and four year degree programs in Music. The entrance requirement is an average of at least 60 per cent in English 30 and four other appropriate Grade 12 subjects.
- **Mount Royal College** in Calgary offers a two year Music Performance diploma program with specializations in orchestral instruments and vocal music. The entrance requirements are a high school diploma or equivalent, performance skills equivalent to Grade 10 Conservatory, an audition and a placement test in music theory, history and keyboard.
- **Red Deer College** offers a two year Music diploma program. The entrance requirements are a high school diploma with English 30 or 33, an audition and an examination.
- **University of Alberta** in Edmonton offers four year degree programs and five year combined degree programs in Music. The entrance requirement for the Bachelor of Music program, which has a specialization in composition, is a high school diploma with an average of at least 72 per cent in English 30 and four of the following subjects: a 30-level language other than English, a second 30-level language other than English, Biology 30, Chemistry 30, Physics 30, Math 30, Pure Math 30, Math 31, Science 30, one approved Fine Arts subject. An audition, music rudiments exam and aural skills exam are required. The University of Alberta in Camrose also offers bachelor degree programs in music.
- **University of Calgary** offers a four year degree program with a specialization in composition. The entrance requirements are a high school diploma with an average of at least 72 per cent in English 30 and four of the following subjects: Social Studies 30, Pure Math 30, Applied Math 30, Math 31, Biology 30, Chemistry 30, Physics 30, Science 30, a 30-level language other than English, Music 30 or one five credit Grade 12 subjects. An audition and interview are also required.
- **University of Lethbridge** offers four year degree programs and five year combined degree programs with a specialization in theory (including composition). The entrance requirement are an average of at least 65 per cent in English 30 and three other appropriate 30-level subjects plus a fifth Grade 12 subject, an appropriate music background and an audition.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

(section revised JANUARY 2006)

Few composers earn a living from composition alone. Many work in related areas to supplement their incomes:

- performing or accompanying soloists
- teaching privately or in colleges or universities
- arranging or orchestrating scores.

Composers may be commissioned to write a piece of music by a major arts organization or a provincial arts funding source. There is considerable competition for available grants and commissions.

Music publishers may be interested in listing new pieces of original music in their catalogues. However, many Canadian composers have begun publishing their own works to retain control over publishing and distribution. Some composers use the services of music agents to negotiate contracts and agreements.

Composers are part of the larger National Occupational Classification 5132: Conductors, Composers and Arrangers. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Information, Culture and Recreation**
- **Repair, Maintenance, Personal and Other Services**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 300 Albertans are employed in the Conductors, Composers and Arrangers occupational group which is expected to grow 1.2 to 2.2 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover. (**Note**: Since composers form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for composers.)

Salary

(section revised OCTOBER 2005)

Composers often negotiate their fees directly with their employers. Fees vary widely and are not necessarily based on experience.

The Canadian League of Composers pays a flat "per minute" rate to composers of commissioned works. The reputation and talent of the composer determines what the fee will be when long pieces of music are commissioned.

Composers are paid royalties from performances of their music. Royalties are collected and distributed by the Society of Composers, Authors and Music Publishers of Canada.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Conductors, Composers and Arrangers occupational group working part-time or full-time earned an average salary of **$22,900 a year**.

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Canadian League of Composers website: www.composition.org

Cultural Human Resources Council website: www.culturalhrc.ca

Guild of Canadian Film Composers website: www.gcfc.ca

Society of Composers, Authors and Music Publishers of Canada website: www.socan.ca

Related Occupational Profiles

Choral Conductor
Instrumental Musician
Music Copyist
Orchestra/Band Conductor
Orchestrator/Arranger
Songwriter

Related High School Subjects

Fine Arts (Music); and Language Arts

Related Post-Secondary Fields of Study

Fine Arts and Performing Arts

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Computer and Network Operator

Produced JULY 2004

Computer and network operators establish, operate, maintain and support the use of local area networks (LANs), wide area networks (WANs), mainframe networks and related hardware, software and peripheral equipment.

NOC Number(s): 2281.1
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: O M d

Duties

Computer networks range in size and design from a simple link between two personal computers in the same building to massive networks that link computers of varying capabilities all over the world.

Duties and responsibilities vary from one job to another, depending on the size and nature of the network. However, in general, computer and network operators:

- maintain, troubleshoot and administer networks, computer workstations and peripheral equipment (e.g. printers)
- evaluate and install computer hardware, networking software and operating system software
- configure and maintain switching and routing equipment
- operate master consoles to monitor the performance of computer systems and networks and to co-ordinate use of a network
- load computer tapes and disks and install software and printer paper and forms
- diagnose hardware and related software problems and replace defective components
- implement data, software and hardware security procedures (e.g. ensure secure connections and safeguard against denial-of-service attacks)
- oversee the installation of copper, optic fiber and wireless network media
- perform routine network startup and shut down procedures and maintain control records
- perform data backups and disaster recovery operations.

Computer technology changes so rapidly that computer and network operators are constantly assessing the suitability of new products and changing network components. To keep up to date with new developments, they share information via e-mail, use web-based resources, attend technical training courses and conferences, and read computer-related journals, magazines and newsletters.

Working Conditions

Computer and network operators may work in environmentally-controlled computer rooms and offices. They may work standard office hours or be required to work 8 to 12 hour shifts, evenings, nights and weekends. Some light lifting (up to 10 kilograms) is required.

Personal Characteristics

Computer and network operators need the following characteristics:

- the ability to think logically and analyze complex problems
- the ability to express ideas in clear, understandable terms and communicate effectively with vendors, co-workers and network users
- the ability to work efficiently under pressure
- the ability to get along well with network users and remain calm in stressful circumstances
- a keen interest in keeping up to date with technological developments.

They should enjoy analyzing information and solving problems, taking a methodical approach to tasks requiring precision, and consulting with others.

Educational Requirements

(section revised NOVEMBER 2005)

Computer and network operators are usually graduates of post-secondary programs related to computer science or training programs offered by network software vendors. Some employers require job applicants to have certification or training for a specific type of network environment (e.g. Cisco Certified Network Associate, Microsoft Certified Systems Expert). Prospective computer and network operators are strongly advised to discuss their training options with potential employers before enrolling in a training program.

In Alberta, many universities, colleges, technical institutes and private vocational schools offer post-secondary programs related to computer science and information technology. For a list, see the Computer Programmer occupational profile. The following institutions offer programs specifically related to network administration or technology:

- **Academy of Learning**, a private vocational school in Airdrie, Calgary, Edmonton, High River, Lethbridge, Medicine Hat and Red Deer
- **Alberta Career Computer Center**, a private vocational school in Edmonton
- **Bow Valley College** in Calgary
- **CDI College of Business and Technology**, a private vocational school in Calgary and Edmonton
- **Columbia College**, a private vocational school in Calgary
- **DeVry Institute of Technology**, a private vocational school in Calgary
- **Grant MacEwan College** in Edmonton
- **Lakeland College** in Lloydminster
- **Lethbridge Community College**
- **Medicine Hat College**
- **Mount Royal College** in Calgary through Continuing Education
- **NorQuest College** in Edmonton
- **Northern Alberta Institute of Technology (NAIT)** in Edmonton
- **Prestwick College**, a private vocational school in Calgary
- **Red Deer College**
- **Southern Alberta Institute of Technology (SAIT)** in Calgary
- **Trend College** a private vocational school in Edmonton.

Admission requirements vary but generally include a high school diploma or equivalent with English 30 or 33 and Pure Math 30 or Applied Math 30 or mature student status. Admission to some programs is competitive and requires additional courses such as Physics 20 or a 30-level science.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

(section revised JANUARY 2006)

Computer and network operators are employed by medium to large corporations, government departments and consulting firms. Some are self-employed consultants.

Advancement opportunities depend on the size of the organization and the employee's qualifications. Experienced computer and network operators may move into a related occupation such as web technician or, with additional training, become computer programmers, interactive media developers or web designers.

Computer and network operators are part of a larger computer systems analysts occupational group. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Professional and Technical Services**
- **Public Administration**
- **Finance, Insurance and Real Estate**
- **Oil and Gas Extraction**
- **Information, Culture and Recreation**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta

- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 3,900 Albertans are employed in the Computer and Network Operators and Web Technicians occupational group which is expected to grow 2.1 to 3.1 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 80 to 130 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since computer and network operators form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for computer and network operators.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Computer and Network Operators occupational group working part-time or full-time earned from **$19,600 to $125,300 a year.** The average salary was **$42,600 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Canadian Information Processing Society (CIPS) website: www.cips.ca

Software Human Resource Council (SHRC) website: www.shrc.ca

Related Occupational Profiles

Computer Engineer
Computer Programmer
Customer Support Analyst
Interactive Media Developer
Systems Security Analyst
Systems Tester
Web Designer
Web Technician

Related High School Subjects

Electro-Technologies; Information Processing; Language Arts; Mathematics; and Science (Physics)

Related Post-Secondary Fields of Study

Computer and Information Technology

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Computer Engineer

Produced JULY 2004

Computer engineers design, implement, evaluate, modify, maintain and test computer systems and related equipment.

NOC Number(s): 2147.1
Minimum Education: 4 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: I O D

Duties

Computer engineers design, develop and test computer hardware and support peripherals including central processing units (CPUs), support logic, microprocessors, custom integrated circuits, field-programmable gate arrays and peripherals such as printers and disc drives. In some cases, they develop special purpose embedded products that use computer technology as part of a larger project. For example, embedded computers are used in applications ranging from washing machine controls to automobile engines. This often requires low-level or high-level software coding.

Computer engineers are responsible for:

- analyzing product and client requirements
- developing design specifications including performance expectations and materials to be used
- assembling, adapting and testing existing pieces of equipment for a specialized function
- building prototypes (working models) of a product including the development of logic and digital circuit designs
- testing and modifying the prototype prior to large-scale manufacturing.

They may also be responsible for:

- analyzing the needs of the user and recommending appropriate hardware
- providing a cost analysis and obtaining quotes from suppliers
- developing system specifications
- analyzing operating problems and making modifications
- determining system performance standards
- writing product documentation
- selling computer technology
- modifying existing hardware and software to meet specialized needs
- preparing proposals for software and hardware systems.

Computer engineers must constantly update their knowledge and skills to keep up with rapid advancements in computer technology. They often work as members of design teams that may include a project engineer, senior engineers, software engineers, technologists, technicians and marketing and manufacturing specialists.

Working Conditions

Computer engineers spend most of their time in an office or laboratory environment working with computers, testing equipment and documenting systems. They may work considerable overtime and experience a great deal of pressure to meet deadlines. Some lifting may be required during the course of their work (between 5 and 25 kilograms) as well as climbing and bending.

Personal Characteristics

Computer engineers need the following characteristics:

- excellent oral and written communication skills
- inquiring and inventive minds
- a capacity for details

- patience and a systematic approach to trouble-shooting
- good decision-making and problem-solving skills
- an aptitude for mathematics and science
- the ability to teach others
- good time management skills.

They should enjoy being innovative, working both with others and on their own, and doing work that requires precision.

Educational Requirements

Computer engineers must have **a four year degree in computer engineering or a related discipline** such as electrical engineering. Some employers hire only computer engineers who have a master's degree in electrical engineering. A doctoral degree in engineering is generally required for a career in teaching or research.

The **University of Alberta** in Edmonton and the **University of Calgary** offer four year bachelor of science degree programs and advanced degree programs in computer and electrical engineering. The minimum admission requirement for the bachelor's degree program is a high school diploma with an average of 78 or 80 per cent in the following Grade 12 subjects:

- English 30
- Pure Math 30
- Math 31
- Chemistry 30
- Physics 30.

There are student admission quotas for the Faculties of Engineering at both institutions. Programming experience at the high school level is an asset. The first year of studies is a common year of study for all engineering disciplines. Students specialize in computer engineering in the second, third and fourth years.

Both universities offer co-operative education programs in engineering consisting of periods of academic study alternating with periods of planned work experience in industry. Students in the co-operative program usually take five years to complete the requirements of the degree.

Post-secondary institutions throughout the province offer university transfer programs which allow students to apply up to two years of study toward university bachelor's degree programs. It is the student's responsibility to ensure that the courses they choose to take will be accepted for credit at the institution to which they wish to transfer.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Other Requirements

(section revised OCTOBER 2004)

Under Alberta's Engineering, Geological and Geophysical Professions Act, you must be a registered member of the Association of Professional Engineers, Geologists and Geophysicists of Alberta (APEGGA) to practice as a Professional Engineer. You do **not** have to be registered if you work under the direct supervision of a Professional Engineer and do not call yourself a Professional Engineer.

Employment and Advancement

(section revised JANUARY 2006)

Computer engineers are employed in almost any industry in which computers are used. In particular, they are employed by companies involved in:

- telecommunications
- computer manufacturing
- consulting
- hardware research and development
- consumer electronics
- industrial instrumentation and process control.

Working for smaller companies requires a broader range of skills; duties with larger companies may be more specialized. Computer engineers are also employed by governments and hospitals.

With experience, computer engineers may establish their own businesses, move into marketing or other areas of

engineering, or advance to supervisory positions and management positions. Training or experience in business administration is an asset.

In Alberta, over 75 per cent of people employed as computer engineers work in the following industries:

- **Professional and Technical Services**
- **Other Manufacturing**
- **Information, Culture and Recreation**
- **Oil and Gas Extraction**
- **Public Administration**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 1,250 Albertans are employed in the Computer Engineers occupational group (except Software Engineers) which is expected to grow 1.6 to 2.6 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 20 to 40 **new** positions will be created each year **in addition** to job openings created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised SEPTEMBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, part-time or full-time starting salaries for Albertans working in the Computer Engineers (Except Software Engineers) occupational group ranged from **$22,800 to $77,500 a year.** The average salary was **$76,700 per year**.

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Association of Professional Engineers, Geologists and Geophysicists of Alberta (APEGGA) website: www.apegga.org

Canadian Information Processing Society (CIPS) website: www.cips.ca

Related Occupational Profiles

Computer and Network Operator
Electrical Engineer
Software Engineer
Technical Sales Representative

Related High School Subjects

Design Studies; Electro-Technologies; Information Processing; Language Arts; Mathematics; and Science (Chemistry; and Physics)

Related Post-Secondary Fields of Study

Computer and Information Technology; and Engineering, Architecture and Related Studies

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Computer Programmer

Produced JULY 2004

Computer programmers create, modify and test the forms, scripts and code that tell computers what to do.

NOC Number(s): 2174.1
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: I M D

Duties

Computer programmers may combine and adapt existing programs or program components, or actually write computer code. They use application design and development tools, and different computer and database languages for different types of applications (e.g. business, commercial, engineering or scientific software).

In general, computer programmers:

- work from specifications drawn up by systems analysts or discuss requirements with people who will be using the program
- analyze requirements to determine what steps need to be taken and in what order, and translate these steps into computer language commands
- test programs and software applications to see if they work and debug them (find and correct errors)
- document programs and procedures by writing descriptions of what the programs do and how they do it, by preparing user manuals or help screens and by updating case repositories
- maintain existing computer programs by making minor modifications, as required.

Working Conditions

Computer programmers work in an office environment. Overtime may be required to meet deadlines or to debug programs that are not running properly.

Personal Characteristics

Programmers need the ability to:

- think logically and concentrate for long periods of time
- change abruptly from using abstract logic to dealing with masses of program details
- remain patient and persistent when debugging programs
- pay attention to details to avoid time-consuming and costly errors
- communicate ideas clearly
- get along well with clients and other team members.

They should enjoy learning new computer languages and programming styles, and developing innovative solutions to problems.

Educational Requirements

(section revised NOVEMBER 2005)

Most computer programmers have completed a post-secondary education program in computer science or a related discipline that has a significant programming component. There are a wide variety of three and four year degree programs, two year diploma programs and one year certificate programs in this field that are offered by universities, colleges, technical institutes and private vocational schools.

Before enrolling in an education/training program, prospective programmers should:

- decide what type of programming work they want to do (and in which industry)

- talk to potential employers about required and preferred qualifications for that type of programming.

After graduation, all programmers must continuously upgrade their knowledge in this rapidly changing field.

In Alberta, the following post-secondary education institutions offer programs directly related to computer programming:

- **Academy of Learning**, a private vocational school in Airdrie, Calgary, Edmonton, High River, Lethbridge, Medicine Hat and Red Deer
- **Alberta Career Computer Centre**, a private vocational school in Edmonton
- **Athabasca University** (distance education program)
- **Bow Valley College** in Calgary
- **CDI College of Business and Technology**, a private vocational school in Calgary and Edmonton
- **Concordia University College of Alberta** in Edmonton
- **DeVry Institute of Technology**, a private vocational school in Calgary
- **Grande Prairie Regional College**
- **Grant MacEwan College** in Edmonton
- **Keyano College** in Fort McMurray
- **The King's University College** in Edmonton
- **Lakeland College** in Lloydminster
- **Lethbridge Community College**
- **Medicine Hat College**
- **Mount Royal College** in Calgary
- **Northern Alberta Institute of Technology (NAIT)** in Edmonton
- **Prestwick College**, a private vocational school in Calgary
- **Red Deer College**
- **Southern Alberta Institute of Technology (SAIT)** in Calgary
- **Sprott-Shaw Community College**, a private vocational school in Calgary
- the **University of Alberta** in Edmonton and Camrose
- the **University of Calgary**
- the **University of Lethbridge**.

In general, the admission requirement for the university programs (other than Athabasca University) is a high school diploma or equivalent with an acceptable average (ranging from 60 to 80 per cent depending on the program) in English 30, Pure Math 30 and three other approved 30-level subjects (Math 31 and Physics 30 recommended). Admission to college and technical institute programs generally requires a high school diploma or equivalent with English 30 and Pure Math 30 (or a minimum average in English 33 and Applied Math 30) or equivalent.

Continuing education programs are often offered on an as needed basis.

For current information on programs and mature student admission policies, please check post-secondary calendars or websites.

Other Requirements

(section revised OCTOBER 2004)

Information Systems Professional is a protected title under Alberta's Professional and Occupational Associations Registration Act. This means that to call yourself an Information Systems Professional, you must be a registered member of the Canadian Information Processing Society of Alberta (CIPS Alberta). You do **not** have to be registered if you do not call yourself an Information Systems Professional.

Employment and Advancement

(section revised JANUARY 2006)

Computer programmers are employed by large software companies and consulting firms, many of which are based outside Alberta. Most programmers employed in Alberta work in the information systems departments of large organizations or in small specialized software development firms. Employers include:

- consulting firms
- software developers
- insurance, oil, transportation and utility companies
- municipal, provincial and federal governments
- educational and financial institutions.

Some programmers are involved in research and scientific work for universities, research foundations and computer design and manufacturing companies. Some work as consultants, developing programs for companies with specific software needs. A small percentage are employed as programming instructors in colleges and institutes of technology.

Junior programmers require two or three years of experience and additional training to become applications or systems programmers. Experienced programmers may become lead applications programmers or systems analysts. With additional training and experience, programmers may move into related fields such as database administration, systems security or network design.

In Alberta, over 75 per cent of people employed as computer programmers work in the following industries:

- **Professional and Technical Services**
- **Public Administration**
- **Finance, Insurance and Real Estate**
- **Oil and Gas Extraction**
- **Information, Culture and Recreation**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

About 11,300 Albertans are employed in the Computer Programmers and Interactive Media Developers occupational group which is expected to grow 2.3 to 3.3 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 250 to 380 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since computer programmers form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for computer programmers.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised JANUARY 2006)

Salaries for computer programmers depend on the education and experience of the programmer, and the size, location and type of employer.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Computer Programmers occupational group working part-time or full-time earned from **$20,600 to $124,400 a year.** The average salary was **$52,000 a year.**

Other Sources of Information

EDinfo website: www.alis.gov.ab.ca/edinfo

Canadian Information Processing Society (CIPS) website: www.cips.ca

Software Human Resource Council (SHRC) website: www.shrc.ca

Related Occupational Profiles

Career and Technology Studies Teacher
Computer and Network Operator
Customer Support Analyst
Database Analyst
Information Systems Consultant
Information Systems Quality Assurance Analyst
Interactive Media Developer
Software Engineer
Systems Auditor
Systems Security Analyst
Systems Tester
Web Designer
Web Technician

Related High School Subjects

Information Processing; Language Arts; Mathematics; and Science (Physics)

Related Post-Secondary Fields of Study

Computer and Information Technology

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Computer Service Technician

Produced SEPTEMBER 2004

Computer service technicians install, service and configure computer systems and networks including desktop computers, servers and peripherals such as printers, disk drives and CD-ROM drives.

NOC Number(s): 2242
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **O I M**

Duties

Computer service technicians' duties and responsibilities vary from one position to another but, in general, they:

- inspect and connect new equipment
- configure systems and install/update systems and applications software
- install, configure and troubleshoot Internet connections
- connect computers to wired and wireless local area networks
- test new systems to ensure that they are in working order
- respond to customer complaints and provide technical advice
- diagnose and troubleshoot hardware and related software problems
- remove viruses from infected machines
- install circuit boards and peripherals
- keep records of maintenance work and repairs
- analyze customer equipment performance records.

Working with customer support analysts, computer service technicians may field test new equipment and report the results to engineering and manufacturing personnel.

Working Conditions

Computer service technicians work in surroundings that may vary from clean and well-ventilated to cold and dusty. They may be required to lift and carry computer components weighing up to 40 kilograms.

A 40-hour work week is standard but technicians may be on 24-hour call for specified periods and work overtime when systems malfunction. The work can be stressful when systems are not working properly and customers are upset.

Personal Characteristics

Computer service technicians need the following characteristics:

- good communication and interpersonal skills for dealing with customers in problem situations
- mechanical aptitude and the ability to think logically
- an aptitude for and interest in math and science
- good problem-solving skills
- the ability to work alone and with others.

They should enjoy using instruments and equipment to perform tasks requiring precision, taking a methodical approach to gathering information and assisting technologists and engineers.

Educational Requirements

(section revised DECEMBER 2005)

The **minimum** education requirement for computer service technicians is **a high school diploma plus related training or experience.** Employers generally prefer to hire job applicants who have related post-secondary education and A+ certification (see below). Advancement may require a related two year diploma or equivalent (for information about two year programs, see the Computer and Network Operator, Computer Programmer and Customer Support Analyst occupational profiles).

There are a variety of post-secondary education programs offered in this field. Prospective students are advised to talk to potential employers about program suitability and reputation before choosing a program of study.

In Alberta, the following institutions offer related technical programs that are **less than one year** in length:

- **Academy of Learning**, private vocational schools in Airdrie, Calgary, Edmonton, High River, Medicine Hat and Red Deer offer a 46- or 51-week PC Support Specialist program. The entrance requirement is a high school diploma with a Grade 12 English and a Grade 10 math, or equivalent.
- **Alberta Career Computer Center**, a private vocational school in Edmonton, offers a 19 week Computer Service Professional program and a 44-week Systems Support Technology program. The entrance requirement is a high school diploma with Grade 12 English and Math 10 or any Grade 11 math or equivalent.
- **Bow Valley College** in Calgary offers a 32-week Computer Technician certificate program that includes five weeks of work experience. The entrance requirement is a high school diploma with English 20 or 33 and Applied Math 30 or equivalent.
- **Columbia College**, a private vocational school in Calgary, offers full-time (25 weeks) and part-time (50 weeks) Information Technologies Specialist programs and a full-time (24 weeks) and part-time (48 weeks) Information Technologies Technician programs. The entrance requirement is a high school diploma with at least 60 per cent in Grade 12 English and math, or equivalent.
- **DeVry Institute of Technology**, a private vocational school in Calgary, offers a 45-week Electronics and Network Technology Diploma program. The entrance requirement is a high school diploma or equivalent.
- **Grande Prairie Regional College** offers a one year certificate program in Computer Systems Technology. The entrance requirement is a high school diploma with Pure Math 30 and English 30 or equivalent.
- **HCC Computer Training Centre and Career College**, a private vocational school in Spruce Grove, offers a 25-week Hardware/Software Support program. The entrance requirement is a high school diploma with Grade 12 English and Math 10 or any Grade 11 math, or equivalent.
- **Lakeland College** in Lloydminster offers a one year Computer Technology Certificate program. The entrance requirement is a high school diploma preferably with English 30 and Pure Math 30.
- **Medicine Hat College** offers a one year certificate program in Information Technology. The entrance requirement is English 30 (or 60 per cent in English 33) and Math 30 (or 65 per cent in Math 20 or 33).
- **NorQuest College** offers a 25-week Microsoft Certified Systems Expert, A+ certificate program that includes eight weeks of work experience. The entrance requirements include a skills appraisal test in English and Math, an admission interview, and familiarity with DOS and Windows.
- The **Northern Alberta Institute of Technology (NAIT)** in Edmonton offers a one year Electronic Service Technician program. The entrance requirement is a high school diploma with English 30 or 33 and Pure or Applied Math 30.
- **Northern Lakes College** in Grouard and Slave Lake offers a 40-week Computer Technician certificate program. Applicants must have English 33 and Math 23 (or pass an entrance exam), typing speed of at least 20 words per minute and previous experience with computers.
- **Prestwick College**, a private vocational school in Calgary offers a 47-week Certified Solutions Professional program. The entrance requirement is a high school diploma or equivalent, admission interview and two letters of reference.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Continuing education programs may be offered on an as needed basis.

Many employers provide ongoing training opportunities, both in the classroom and on the job, to help computer service technicians keep up to date with rapidly changing technology.

Other Requirements

The Alberta Society of Engineering Technologists (ASET) offers certification for graduates of recognized education programs who have two years of successful experience in industry. The designations CET (Certified Engineering Technologist) and C. Tech. (Certified Technician) can be used only by members of ASET and other provincial associations within the Canadian Council of Technicians and Technologists (CCTT).

Employment and Advancement

(section revised JANUARY 2006)

Computer service technicians are employed by computer manufacturers, computer consulting firms, computer sales and service firms and large organizations such as government departments and major corporations.

Experienced computer service technicians may advance to supervisory or management positions. Those who have advanced training may become technical specialists who assist engineers in designing equipment.

Computer service technicians are part of the much larger National Occupational Classification 2242: Electronic Service Technicians (Household and Business Equipment). In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Professional and Technical Services**
- **Management, Administrative and Other Support Services**
- **Repair, Maintenance, Personal and Other Services**
- **Retail Trade**
- **Wholesale Trade**
- **Educational Services**
- **Construction**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 10,650 Albertans are employed in the Electronic Service Technicians (Household and Business Equipment) occupational group which is expected to grow 1.9 to 2.9 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 200 to 310 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since computer service technicians form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for computer service technicians.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Salaries for computer service technicians **vary considerably** depending on the employer and the employee's qualifications and responsibilities.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Electronic Service Technicians (Household and Business Equipment) occupational group working part-time or full-time earned from **$14,200 to $81,100 a year.** The average salary was **$44,200 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Canadian Information Processing Society (CIPS) website: www.cips.ca

Alberta Society of Engineering Technologists (ASET) website: www.aset.ab.ca

Related Occupational Profiles

Automated Systems Technologist
Electrical Engineering Technologist
Electronics Assemblers and Fabricators
Electronics Engineering Technologist
Office Equipment Technician

Related High School Subjects

Electro-Technologies; Information Processing; Language Arts; and Mathematics

Related Post-Secondary Fields of Study

Computer and Information Technology

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Concrete Finisher

Produced FEBRUARY 2006

Concrete finishers place and finish concrete floors, driveways, sidewalks, curbs, bridge decks and other concrete structures.

NOC Number(s): 7282
Minimum Education: Apprenticeship Trade - Grade 9
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **O M i**

Duties

Duties vary from one position to another but, in general, concrete finishers:

- place wet concrete into the forms and spread it to a specified depth
- level and smooth the surface, round the edges and make joints or grooves to help control cracking on the surface
- apply architectural, exposed, patterned or stamped, broomed and smooth finishes on concrete surfaces

They also repair, waterproof and restore concrete surfaces.

Working Conditions

Concrete finishers work both outdoors and indoors at tasks that are fast-paced and strenuous. Travel may be required to get to construction sites.

Outdoor work can be affected by adverse weather conditions, so there is usually less work available in the winter. Summer hours are often longer than the standard 40-hour week. Overtime is sometimes required because concrete finishers cannot leave a project in the middle and return to it the next day.

There is some risk of injury due to uneven footing and from other construction-site hazards. The work also involves considerable bending, stooping and kneeling.

Concrete finishers may be required to lift items weighing over 25 kilograms.

Personal Characteristics

Concrete finishers need the following characteristics:

- physical strength and stamina
- the ability to get along well with other workers.

They should enjoy physical exercise and working with their hands.

Educational Requirements

Concrete finishers must know how to use dry pack grouting and epoxy materials, and understand how to cure concrete perfectly.

To work in Alberta, concrete finishers must be ONE of the following:

- registered apprentices
- certified journeymen
- working for an employer who is satisfied that they have the skills and knowledge expected of certified journeymen
- self-employed.

To **register** with **Alberta Apprenticeship and Industry Training**, apprentices must:

- have at least an Alberta Grade 9 education (or equivalent) or pass an entrance exam
- find a suitable employer who is willing to hire and train an apprentice. Most employers prefer to hire high

school graduates and may select apprentices from among their current employees.

The **term of apprenticeship** is three years (three 12-month periods) that include a minimum of 1,200 hours of on-the-job training and four weeks of technical training in the first and second year and a minimum of 1,200 hours of on-the-job training in the third. High school students can become apprentices and gain credits toward apprenticeship training and a high school diploma at the same time through the Registered Apprenticeship Program (RAP).

Applicants who have related training or work experience may be eligible for credit or certification.

Concrete finisher apprentices may attempt the Interprovincial Exam in the final period of their apprenticeship training and, if successful, are granted a Red Seal (which is recognized in most parts of Canada).

Technical training is arranged by Alberta Apprenticeship and Industry Training and is currently offered by the Southern Alberta Institute of Technology (SAIT) in Calgary.

Pre-employment programs for prospective apprentices and continuing education programs for journeymen may be offered on an as needed basis by the institution(s) listed above or other schools.

Employment and Advancement

Most concrete finishers are employed by general contractors involved in building highways, bridges and large buildings and by contractors who do only concrete work. A few concrete finishers are self-employed, contracting their services for smaller projects such as patios, sidewalks and driveways.

Experienced concrete finishers may specialize in a particular type of work, advance to supervisory positions or become contract estimators. Alberta certified journeyman concrete finishers who have the supervisory or management skills required by industry may apply for an Achievement in Business Competencies Blue Seal by contacting Alberta Apprenticeship and Industry Training.

In Alberta, most people employed as concrete finishers work in the **Construction** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- time of year (for seasonal jobs)
- trends and **events** affecting overall employment (especially in the Construction industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 2,050 Albertans are employed in the Concrete Finishers occupational group which is expected to grow 1.8 to 2.8 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 30 to 60 **new** positions will be created each year **in addition** to job openings created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Apprentice concrete finishers are paid at least 65 per cent of the journeyman wage rate in their place of employment in the first year, 75 per cent in the second and 85 per cent in the third. According to the Alberta Provincial Apprenticeship Committee for this trade, journeyman wage rates vary, but generally range from **$16 to $23 an hour plus benefits** (2004 estimate).

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Concrete Finishers occupational group working part-time or full-time earned from **$31,300 to $83,300 a year.** The average salary was **$55,000 a year.**

Other Sources of Information

Alberta Apprenticeship and Industry Training website: www.tradesecrets.org

Alberta Construction Industry "Trade Up!" website: www.careersconstruction.com

Calgary Construction Association website: www.cca.cc

Construction Sector Council website: www.csc-ca.org

Related Occupational Profiles

Bricklayer
Construction Craft Labourer
Lather-Interior Systems Mechanic
Plasterer
Tilesetter

Related High School Subjects

Construction Technologies; and Physical Education

Related Post-Secondary Fields of Study

Trades, Industrial and Related Training

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Conservation Officer

Produced JANUARY 2006

Conservation officers manage resources, visitor services, maintenance and recreation in provincial parks and educate the public about related issues.

NOC Number(s): 2224
Minimum Education: 4 years post-secondary education/training
Employment Outlook: Employment turnover plus below average occupational growth in Alberta
Interests: **D M S**

Duties

Conservation officers work directly with the public in provincial parks. Their ojectives are to:

- safeguard people while they are visiting parks
- minimize conflict between park visitors
- protect the natural resources of the park.

Duties vary from one position to another but, in general, conservation officers:

- offer information and assistance to park visitors
- monitor and manage resources
- co-ordinate forest fire suppression activities
- supervise and train park employees
- respond to correspondence, complete reports and prepare budgets
- investigate violations and ensure compliance with resource-related laws and regulations
- conduct search and rescue operations as needed
- inform policy makers and wildlife investigators
- make presentations and conduct public outreach activities
- contribute to park management and operational plans
- co-operate with wildlife researchers in development management and enforcement strategies
- supervise the construction or repair of facilities and maintenance of equipment.

Conservation officers frequently patrol their areas by truck, boat or plane, or on foot, skis or horseback. They watch for potential hazards and assess the condition of the park, its wildlife and other natural resources.

Conservation officers are trained in first aid and life-saving techniques and must take charge of the situation when visitors are lost, injured or endangered. They work in co-operation with police, fish and wildlife officers, and other resource management and enforcement agencies.

Working Conditions

Conservation officers work indoors and outdoors, sometimes in extreme weather conditions or rough terrain. Travel is required, sometimes by unusual modes of transport such as canoe, snowmobile or horseback. Some risk is involved in capturing and handling animals and enforcing regulations.

Hours of work include weekends and holidays, and may include night shifts or split shifts. Overtime may be required to respond to violations or events involving serious conflict between humans and wildlife.

Lifting up to 10 kilograms is routinely required; heavier lifting may be required in some circumstances.

Personal Characteristics

Conservation officers need the following characteristics:

- tact, diplomacy and excellent interpersonal skills
- an interest in nature and concern for the environment

- good health and physical conditioning
- good oral and written communication skills
- the ability to remain calm in stressful situations
- excellent problem solving skills.

They should enjoy conducting patrols, compiling information and working with people.

Educational Requirements

The minimum education requirement for conservation officers is a related four year bachelor's degree. Computer skills are a definite asset.

Science degree programs are offered by post-secondary institutions throughout Alberta. The following institutions offer four year Conservation or Environmental Science programs:

- **Concordia University College of Alberta** in Edmonton offers a Bachelor of Science degree program in Environmental Science. The entrance requirement is a 60 per cent average in English Language Arts 30-1 (or English 30), Pure Math 30, Biology 30, Chemistry 30 and one other appropriate 30 level subject.
- **The King's University College** in Edmonton offers Bachelor of Arts and Bachelor of Science degree programs in Environmental Studies. The entrance requirement is a 60 per cent average in five approved 30 level courses including English Language Arts 30-1 (or English 30), Pure Math 30 and Biology 30 or Chemistry 30 (both are recommended).
- **Lakeland College** in Vermilion offers a post-diploma Bachelor of Applied Environmental Management degree program. The entrance requirement is successful completion of an approved two year diploma program. Suitable diploma programs are offered by Lakeland College, Keyano College, the Northern Alberta Institute of Technology, Olds College and some institutions outside Alberta.
- **Lethbridge Community College** offers a Bachelor of Applied Conservation Enforcement program. The entrance requirement is a high school diploma with a 60 per cent average in English Language Arts 30-1 (or English 30), Pure or Applied Math 30, Biology 30, Chemistry 20 and Social Studies 30. Medicine Hat College also offers the first year of this program.
- The **University of Alberta** in Edmonton offers a Bachelor of Science degree program in Environmental and Conservation Sciences. The entrance requirement is a high school diploma with a competitive average in English Language Arts 30-1 (or English 30), Pure Math 30 (or Math 30), Biology 30, Chemistry 30 and one other approved Grade 12 subject. The University of Alberta also offers a combined degree program in Environmental and Conservation Sciences/Native Studies.
- The **University of Calgary** offers a Bachelor of Science degree program in Environmental Science. The entrance requirement is a competitive average in English Language Arts 30-1 (or English 30), Pure Math 30, Chemistry 30, one of the following: Biology 30, Physics 30 or Math 31 (Biology 30 is required for the Biological Sciences concentration), and another approved 30 level subject (Math 31 recommended).
- The **University of Lethbridge** offers a Bachelor of Science degree program in Environmental Science. The entrance requirement is a 65 per cent average in English Language Arts 30-1 (or English 30), Pure Math 30 (or equivalent), Biology 30, Chemistry 30 and one other approved Grade 12 subject. An approved diploma is required for post-diploma admission.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Prospective students should consult practicing conservation officers regarding program and course selection.

Employment and Advancement

Conservation officers are employed by the **Government of Alberta**. They may be posted or transferred to any provincial park in Alberta and most officers are transferred at least once during their first few years of employment. Some positions are seasonal.

Experienced conservation officers may specialize in a particular type of work or advance to supervisory positions.

Conservation officers are part of the larger National Occupational Classification 2224: Conservation and Fishery Officers. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Public Administration**
- **Forestry and Logging**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)

- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 600 Albertans are employed in the Conservation and Fishery Officers occupational group which is expected to grow 0.5 to 1.5 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover. (**Note**: Since conservation officers form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for conservation officers.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Conservation and Fishery Officers occupational group working part-time or full-time earned from **$35,900 to $55,700 a year.** The average salary was **$51,400 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Related Occupational Profiles

Biologist
Bylaw Enforcement Officer
Fish and Wildlife Officer
Park Warden
Police Officer

Related High School Subjects

Communication Technology; Community Health; Forestry; Language Arts; Legal Studies; Mathematics; Physical Education; Science (Biology; and Chemistry); Tourism Studies; and Wildlife

Related Post-Secondary Fields of Study

Environment, Forestry and Related Studies

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Conservator

Produced MAY 2003

Conservators plan, co-ordinate and participate in the preservation and conservation of cultural property (contemporary, historic, prehistoric and enthnographic objects, natural history specimens, archival materials and works of art) and study environmental influences on artifact preservation.

NOC Number(s): 5112.1
Minimum Education: 4 years post-secondary education/training
Employment Outlook: Employment turnover plus below average occupational growth in Alberta
Interests: **D i m**

Duties

Conservators work with a wide variety of objects, including:

- clothing and textiles (e.g. historic clothes, household linens, quilts)
- furniture
- musical instruments
- ceramic and glass objects
- metals (e.g. antique cars, silverware)
- taxidermy specimens
- ethnographic materials (e.g. native hide garments)
- archeological materials
- video and audio tapes
- gravestones
- architecture (e.g. forts, grain elevators)
- industrial artifacts
- paintings
- works of art on paper
- sculpture
- photographs
- books and archival materials.

They usually specialize in particular types of objects but, in general, conservators:

- advise curators and archivists regarding the condition of artifacts, archival materials and works of art, possible treatments and options for long-term care
- take preventive conservation measures such as ensuring that the storage environment is stable and protects objects from environmental hazards
- advise curators, archivists, educators and designers concerning environmental needs and suitability for exhibit, storage, loan or travel
- perform analytical tests and technical examinations to determine suitable storage and conservation requirements and treatments
- draft policies and administer procedures to prevent damage which can be caused by excess light, fluctuations in temperature and humidity, dust particles, air pollution, infestation or human handling
- conserve and restore artifacts, archival materials and works of art by using their scientific knowledge and aesthetic sensibility as well as analytical methods (e.g. polarized light, microscopy, chemical analysis) and manual and artistic skills
- maintain written, electronic and photographic records of the condition of artifacts, treatment options and any treatment carried out
- monitor collection storage areas, galleries, reference rooms, libraries and laboratories for pests
- direct and supervise the activities of conservation assistants, technicians and interns
- prepare progress, technical and other reports

- research and evaluate new conservation and restoration techniques (e.g. new cleaning methods for paintings or wood consolidation) and make them available to the museum community.

Working Conditions

Conservators may use, examine and treat a wide variety of materials, including toxic chemicals, and must follow safety precautions to avoid injury. Other occupational hazards include health problems related to repetitive hand movements and neck/back strain.

Personal Characteristics

Conservators need the following characteristics:

- creativity and flexibility
- the ability to concentrate for long periods
- manual dexterity
- perceptual and problem-solving skills
- an active interest in art, science and history and respect for the objects in their care
- a willingness to keep up to date with new conservation techniques
- the ability to work as part of a team.

They should enjoy doing precise work, finding solutions to problems and taking a methodical approach to their work.

Educational Requirements

Conservators must have skills and knowledge in general museum practices and operations, chemistry and another subject area such as:

- art history
- anthropology
- archaeology
- clothing/textile history
- textile science
- studio art/design
- photography
- biology or another science.

They also need creative and manual skills in fields such as painting, photography, sewing, cabinet making or silversmithing, plus internship training in established conservation laboratories and studios.

Related post-secondary education programs are offered throughout Alberta. In particular, the **University of Alberta** in Edmonton offers a four year Bachelor of Science (B.Sc.) degree program in Human Ecology which can include courses in textile conservation and a museum internship. The entrance requirement is an average of at least 70 per cent in English 30, Pure Math 30, Biology 30 or Chemistry 30 and two other 30-level subjects. The University of Alberta also offers a master's degree programs in Textiles and Clothing with a specialization in conservation.

The **University of Calgary** offers Bachelor of Arts, B.Sc. and Bachelor of General Studies degree programs with a minor in Museum and Heritage Studies through the Faculty of Communication and Culture. The entrance requirement is a high school diploma with an average of at least 72 per cent in English 30; one of Pure Math 30, Applied Math 30 or Math 31; and three of Biology 30, Chemistry 30, Physics 30, Social Studies 30, Science 30, a language 30 other than English, or one five credit Grade 12 subject.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Outside of Alberta, the following Canadian institutions offer post-secondary programs directly related to conservation work:

- **Algonquin College of Applied Arts and Technology** in Ottawa offers a three year museum studies program.
- **Queen's University** in Kingston offers a two year master's degree program in Art Conservation with specializations in paintings, artifacts, paper objects and research.
- **Sir Sandford Fleming College** in Peterborough offers a four semester Collections Conservation and Management diploma program.

- The **University of Victoria** Department of History in Art offers a post-graduate Cultural Resource Management diploma with specializations in museum studies and heritage conservation. Many courses are offered through distance education as well as on campus.

The **Canadian Conservation Institute** in Ottawa may offer internship opportunities for practicing conservators and conservation students.

Employment and Advancement

(section revised JANUARY 2006)

Conservators work for:

- federal government departments (e.g. the National Archives of Canada, National Museums, Indian and Northern Affairs Canada, Parks Canada, and the Canadian Conservation Institute)
- provincial government departments such as Alberta Community Development
- museums, art galleries, universities, archives, libraries and historical societies
- research organizations
- other organizations whose mandate is the preservation of cultural property.

Most conservators work on a contract basis. They may have several projects or part-time jobs at the same time. For example, they may do research and conservation work for a museum and consulting work for a historical society as well as teach or write articles.

Conservators are part of the larger National Occupational Classification 5112: Conservators and Curators. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Information, Culture and Recreation**
- **Educational Services**
- **Repair, Maintenance, Personal and Other Services**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 200 Albertans are employed in the Conservators and Curators occupational group which is expected to grow 0.3 to 1.3 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover. (**Note**: Since conservators form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for conservators.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Conservators and Curators occupational group working part-time or full-time earned from **$15,000 to $67,100 a year.** The average salary was **$59,100 a year.**

Other Sources of Information

(section revised JUNE 2005)

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

American Institute for Conservation website: aic.stanford.edu

Canadian Association for Conservation website www.cac-accr.ca and the Alberta Regional Group of Conservators website www.cac-accr.ca/english/e-CAC-about-ARG.asp

Canadian Association of Professional Conservators website: www.capc-acrp.ca

Canadian Conservation Institute website: www.cci-icc.gc.ca

Conservation OnLine website: palimpsest.stanford.edu

Cultural Human Resources Council website: www.culturalhrc.ca

Museums Alberta website: www.museumsalberta.ab.ca

Related Occupational Profiles

Archivist
Craftsperson
Curator
Human Ecologist
Painter/Printmaker
Sculptor

Related High School Subjects

Communication Technology; Fashion Studies; Fine Arts (Visual Arts); Language Arts; Mathematics; and Science (Biology; and Chemistry)

Related Post-Secondary Fields of Study

Fine Arts and Performing Arts; Human Ecology, Fashion and Food Sciences; Sciences; and Social Sciences, Law and Religious Studies

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For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Construction Craft Labourer

Apprenticeship and Industry Training

Produced FEBRUARY 2006

Construction craft labourers prepare and clean up construction sites, move materials and equipment and perform demolition, excavation and compaction activities.

NOC Number(s): 7611
Minimum Education: Designated Occupation - Grade 9
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **M O i**

Duties

Construction craft labourers work on a wide variety of buildings, structures and premises, including municipal sewer and water mains, roads, dams, bridges, tunnels, railways and canals. Their duties and responsibilities vary from one job to another but, in general, they:

- handle and distribute construction materials (e.g. load and unload vehicles with supplies, equipment and construction materials; move tools, equipment and construction materials to and from work areas; remove rubble and other debris)
- excavate, backfill and compact subgrade (e.g. move and level earth using shovels and rakes, operate pneumatic tampers)
- place, consolidate and protect case-in-place concrete or masonry structures (e.g. shovel cement and other materials into cement mixers; mix, pour and spread concrete; use electric and pneumatic vibrators)
- install municipal sewer and water mains (e.g. dig trenches using shovels and other hand tools, align pipes and perform related activities)
- assemble and dismantle scaffolding, ramps, catwalks, shoring and barricades at construction sites.

Construction craft labourers may also:

- drill and blast rock at construction sites
- demolish buildings
- sort, clean and pile salvaged materials from demolished buildings
- operate jackhammers and drills to break up concrete or pavement.

Working Conditions

Construction craft labourers work outdoors in all weather conditions. Overtime is routinely required during peak construction periods. Since there is some risk of injury when working on contruction sites, labourers must wear personal protective equipment (hardhats, gloves and steel-toed boots) and follow safety programs and legislation.

Construction craft labourers may be required to lift items weighing over 25 kilograms.

Personal Characteristics

Construction craft labourers need the following characteristics:

- physical strength and stamina
- manual dexterity
- a safety-conscious attitude
- the ability to work with others in a team.

They should enjoy being physically active, working outdoors and using hand and power tools.

Educational Requirements

Construction craft labourer is a **designated occupation** in Alberta. This means that training and certification are not required but trainees can apply to **Alberta Apprenticeship and Industry Training** for an Alberta Occupational Certificate.

To **register,** trainees must:

- have at least an Alberta Grade 9 education (or equivalent) or pass an entrance exam
- find a suitable employer who is willing to hire a trainee. Most employers prefer to hire high school graduates and/or people who already have related training or experience.

The **term of training** for the construction craft labourer program is a minimum of 12 months that include at least 2,000 hours of work experience.

Applicants who have related training or experience may qualify for credit or certification.

Employment and Advancement

Construction craft labourers are employed by a variety of contractors and road builders in the construction industry, as well as larger companies that have ongoing construction requirements. They may be laid off during the winter months.

Experienced construction craft labourers may advance to supervisory or foreman positions. Certified Alberta construction craft labourers who have the supervisory or management skills required by industry may apply for an Achievement in Business Competencies Blue Seal by contacting Alberta Apprenticeship and Industry Training.

Construction craft labourers are part of the larger National Occupational Classification 7611: Construction Trades Helpers and Labourers. In Alberta, most people employed in this classification work in the **Construction** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- time of year (for seasonal jobs)
- trends and **events** affecting overall employment (especially in the Construction industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

About 16,450 Albertans are employed in the Construction Trades Helpers and Labourers occupational group which is expected to grow 1.5 to 2.5 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 240 to 410 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since construction craft labourers form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for construction craft labourers.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

According to the Alberta Occupational Training Committee for this designated occupation, experienced construction craft labourers earn from **$10 to $22 an hour plus benefits** (2003 estimate).

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Construction Trades Helpers and Labourers occupational group working part-time or full-time earned from **$15,600 to $85,900 a year.** The average salary was **$39,000 a year.**

Other Sources of Information

Alberta Apprenticeship and Industry Training website: www.tradesecrets.org

Alberta Construction Industry "Trade Up!" website: www.careersconstruction.com

Calgary Construction Association website: www.cca.cc

Construction Sector Council website: www.csc-ca.org

Related Occupational Profiles

Bricklayer
Carpenter
Concrete Finisher
Electrician
Plumber

Related High School Subjects

Construction Technologies; and Physical Education

Related Post-Secondary Fields of Study

Trades, Industrial and Related Training

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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OCC*info* Alberta Occupational Profiles

Alberta Human Resources and Employment

Cook

Apprenticeship and Industry Training

Produced FEBRUARY 2006

Cooks prepare food in public and private eating establishments including hotels, restaurants, institutions, trains and ships.

NOC Number(s): 6242
Minimum Education: Apprenticeship Trade - Grade 9
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **M O d**

Duties

Depending on the establishment, cooks can be employed at various tasks. However, their major responsibilities fall under three categories: nutrition, food costs and sanitation.

In general, cooks:

- study menus to estimate food requirements and obtain the necessary food from storage or from suppliers
- wash, peel and cut vegetables
- clean and cut meats, fish and poultry
- clean kitchen equipment and cooking utensils
- prepare, season and cook foods such as soups, salads, meat, fish, gravies, vegetables, desserts, sauces and casseroles
- carve meats, prepare portions on a plate and add gravies, sauces and garnish to servings
- bake pastries
- prepare buffets (e.g. platters, showpieces)
- prepare special diets
- oversee menu planning, regulate stock control and supervise kitchen staff.

Working Conditions

Cooks are often required to work shifts including weekends and holidays. They work under pressure and the work volume can be considerable. There is some risk of injury due to burns and cuts.

Cooks may be required to lift items weighing over 25 kilograms.

Personal Characteristics

Cooks need the following characteristics:

- be fluent in English with reading and writing competency
- have good basic math skills
- have a genuine interest in preparing food
- be in good health and have stamina
- have a keen sense of taste and smell
- be flexible
- the ability to work as members of a team
- the ability to maintain the high standard of cleanliness necessary in any food establishment.

They should enjoy the job's creative challenges and the public's appreciation for their expertise.

Educational Requirements

To work in Alberta, cooks must be ONE of the following:

- registered apprentices
- certified journeymen
- working for an employer who is satisfied that they have the skills and knowledge expected of certified journeymen
- self-employed.

To **register** with **Alberta Apprenticeship and Industry Training**, apprentices must:

- have at least an Alberta Grade 9 education (or equivalent) or pass an entrance exam
- find a suitable employer who is willing to hire and train an apprentice. Most employers prefer to hire high school graduates and may select apprentices from among their current employees.

The **term of apprenticeship** is three years (three 12-month periods) that include a minimum of 1,560 hours of on-the-job training and eight weeks of technical training each year. High school students can become apprentices and gain credits toward apprenticeship training and a high school diploma at the same time through the Registered Apprenticeship Program (RAP).

Applicants who have related training or work experience may be eligible for credit or certification.

Cook apprentices may attempt the Interprovincial Exam in the final period of their apprenticeship training and, if successful, are granted a Red Seal (which is recognized in most parts of Canada).

Technical training is arranged by Alberta Apprenticeship and Industry Training and is currently offered at:

- Lethbridge Community College
- the Northern Alberta Institute of Technology (NAIT) in Edmonton
- Red Deer College
- the Southern Alberta Institute of Technology (SAIT) in Calgary.

Weekly apprenticeship training (WATS) is also offered by Lethbridge Community College and Red Deer College.

Outside the apprenticeship program, the following post-secondary institutions offer related training:

- **Lethbridge Community College** offers a Culinary Careers diploma program. The entrance requirement is a minimum of 60 high school credits with at least 60 per cent in Applied Math 20 and Language Arts 20B or equivalent.
- The **Northern Alberta Institute of Technology (NAIT)** in Edmonton offers a one year certificate and a two year Culinary Arts diploma program. The entrance requirement is Grade 10 or equivalent with English and math. NAIT also offers a 60-hour Culinary Kitchen Skills Series program.
- **Portage College** in Lac La Biche offers a 32-week Culinary Arts certificate program. The entrance requirement is Grade 9 or equivalent.
- The **Southern Alberta Institute of Technology (SAIT)** in Calgary offers a 56-week Professional Cooking diploma program. The entrance requirement is at least 35 high school credits with Pure Math 10 or Applied Math 10 or Math 13 and English Language Arts 10-1 or 10-2, English 10 or 13, or Humanities 10 or equivalent. A resume is required.

Pre-employment programs for prospective apprentices and continuing education programs for journeymen may be offered on an as needed basis by the institution(s) listed above or other schools.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

Cooks are employed in hotels, clubs, restaurants, catering firms, cafeterias, institutions, homes, high-class specialty food outlets and isolated bases and camps. There are also good prospects for travel both within Canada and abroad.

Experienced cooks can advance through promotions with the same employer or by moving to more advanced positions with other employers. They can become:

- sous-chefs, chefs or executive chefs (for more information, see the Chef occupational profile)
- banquet managers (for more information, see the Banquet Manager occupational profile)
- food service administrators and coordinators (for more information, see the Food Service Supervisor and Food and Nutrition Manager occupational profiles)
- general managers or food editors.

Experienced cooks can become a Certified Chef de Cuisine (CCC), a highly respected trade level of certification.

Alberta certified journeyman cooks who have the supervisory or management skills required by industry may apply for an Achievement in Business Competencies Blue Seal by contacting Alberta Apprenticeship and Industry Training.

In Alberta, over 75 per cent of people employed as cooks work in the **Accommodation and Food Services** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- time of year (for seasonal jobs)
- trends and **events** affecting overall employment (especially in the Accommodation and Food Services industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 20,700 Albertans are employed in the Cooks occupational group which is expected to grow 1.4 to 2.4 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 280 to 500 **new** positions will be created each year **in addition** to job openings created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Apprentice cooks earn at least 60 per cent of the journeyman wage rate in their place of employment in the first year, 75 per cent in the second and 85 per cent in the third. According to the Alberta Provincial Apprenticeship Committee for this trade, journeyman wage rates vary, but generally range from **$9 to $12 an hour plus benefits** (2004 estimate).

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Cooks occupational group working part-time or full-time earned from **$10,800 to $68,900 a year.** The average salary was **$19,300 a year.**

Other Sources of Information

Alberta Apprenticeship and Industry Training website: www.tradesecrets.org

EDinfo website: www.alis.gov.ab.ca/edinfo

Related Occupational Profiles

Baker
Canadian Forces Personnel - Non Commissioned
Caterer
Chef
Meat Cutter

Related High School Subjects

Foods; Physical Education; and Tourism Studies

Related Post-Secondary Fields of Study

Personal and Food Services; and Trades, Industrial and Related Training

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For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Correctional Officer

Produced APRIL 2003

Correctional officers are responsible for the supervision, control and custody of offenders who have been sentenced or of people awaiting trial in a court of law.

NOC Number(s): 6462
Minimum Education: High school diploma
Employment Outlook: Employment turnover plus below average occupational growth in Alberta
Interests: **M D s**

Duties

Correctional officers' duties vary depending on the security classification of the correctional institution and the types of programs offered. In general, correctional officers:

- ensure security at all times within the institution
- observe the conduct and behaviour of inmates to prevent disturbances and escapes
- prepare discipline reports and case reports on inmates in their units
- conduct security searches, including searching inmates and inspecting cells, vehicles and buildings.

They may also:

- drive passenger vehicles and trucks involved in transporting inmates to other institutions, courtrooms, hospitals and work sites
- assist in the management of individual cases or writing reports for the National Parole Board.

Correctional officers are expected to act as role models for offenders in the development of positive behaviour and attitudes. Some work with young offenders in young offender institutions and some work at minimum security work camps.

Working Conditions

Correctional officers work both indoors and outdoors and are on their feet most of the time. Shift work is required. The work can be stressful and hazardous because correctional officers must always be on the alert for potential outbreaks of violence.

Personal Characteristics

Correctional officers need the following characteristics:

- responsible and mature
- in good physical condition and able to restrain offenders when required
- good oral communication skills for co-ordinating group activities
- good written communication skills for report writing
- the leadership and interpersonal skills required in daily contact with inmates and other members of the staff
- the ability to make quick and sound decisions in response to security or discipline problems
- the ability to work effectively as part of a team.

They should enjoy having clear rules and guidelines for their work, dealing with people and supervising others.

Educational Requirements

(section revised SEPTEMBER 2005)

Correctional officers must have a valid driver's licence. Those employed with the **federal government must have at least Grade 12 education, and CPR and first-aid certification.** A degree in sociology, psychology or criminology is preferred. Volunteer work experience with people in crisis is a definite asset.

Candidates for correctional officer positions in the federal or provincial government must pass a prescribed medical examination and security clearance requirements. Applicants for federal government positions are also screened according to a values assessment interview and their ability to pass a general competency test. Once employed, federal government correctional officers must successfully complete a Correctional Officer Induction course and a probationary period.

Correctional officers with the **provincial government should have at least a high school diploma plus two years of work experience.** The work experience should be relevant with a particular emphasis on dealing with people. Applicants who have less education may be considered if they have two years of previous corrections experience, knowledge of native languages and culture, or equivalent experience and knowledge. There is a compulsory basic training course with an emphasis on communication skills.

In Alberta, the following post-secondary education institutions offer programs directly related to criminology and correctional services. For listings of other related programs, see the Psychologist, Sociologist and Social Worker occupational profiles.

- **Athabasca University** offers a Bachelor of Professional Arts degree program in Criminal Justice. Applicants must have an approved two or three year diploma in the criminal justice field from an accredited college or technical institute.
- **Bow Valley College** in Calgary offers a two year Correctional Services diploma program. The entrance requirements are a high school diploma with English 30 (30-1) or 33 (30-2) or equivalent.
- **Columbia College**, a private vocational school in Calgary, offers a full-time 25-week or part-time 50-week Criminal Justice Certificate program and a full-time 25-week or part-time 50-week Criminal Justice Diploma program. The entrance requirements for the Certificate program are a high school diploma with at least 60 per cent in English 30 and Math 30 or equivalent, a successful interview and a criminal record check.
- **Grant MacEwan College** in Edmonton offers a two year Correctional Services diploma program through full-time or part-time study and distance education. Applicants must be at least 18 years of age by the end of the intake term and have a high school diploma with at least 65 per cent in English 30 (or 75 per cent in English 33), or equivalent. Two letters of reference, an autobiography, security clearance and a Standard First Aid certificate are also required.
- **Lethbridge Community College** offers a two year Corrections diploma program and a Bachelor of Applied Arts - Corrections Studies program. The entrance requirement for the diploma program is a high school diploma or equivalent. Applicants are required to undergo testing, submit a resume, complete a questionnaire and attend an interview with a faculty member. Graduates from the diploma program will be accepted directly into the bachelor's program. Students with related credentials and prior related work experience will also be considered. Lethbridge Community College also offers a Criminal Justice certificate designed for aboriginal people.
- **Mount Royal College** in Calgary offers a four year Bachelor of Applied Justice Studies program. Applicants must have an average of at least 60 per cent in five appropriate Grade 12 subjects including English 30, Pure or Applied Math 30 and Social Studies 30.
- The **University of Alberta** in Edmonton offers a four year Bachelor of Arts degree program in criminology. The entrance requirement is completion of one year of an undergraduate degree program (usually an Arts program) with a minimum grade point average of 6.0/9. This is a quota program so higher than minimum marks may be required for admission. Two letters of reference from relevant volunteer experience in criminal justice agencies, a resume, a written statement of career objectives and an interview are required.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

For those already employed in the justice field, in-service courses are offered by **Alberta Justice Staff College**.

Employment and Advancement

In Alberta, federal correctional officers are employed in penitentiaries in Bowden, Drumheller, Grande Cache and Edmonton. Provincial correctional officers are employed in institutions in Calgary, Edmonton, Fort Saskatchewan, Grande Prairie, Lethbridge, Red Deer, Medicine Hat and Peace River. Advancement to supervisory positions depends on experience and training.

Salary

(section revised OCTOBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Correctional Service Officers occupational group working part-time or full-time earned from **$37,900 to $55,800 a year.** The average salary was **$45,900 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Related Occupational Profiles

Bylaw Enforcement Officer
Canadian Forces Personnel - Non Commissioned
Police Officer
Private Investigator

Related High School Subjects

Community Health; Language Arts; Legal Studies; Physical Education; and Social Studies

Related Post-Secondary Fields of Study

Social Sciences, Law and Religious Studies; and Social, Community and Protective Services

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For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Correctional Services Worker

Produced APRIL 2003

Correctional services workers supervise adult and young offenders and administer a wide variety of correctional programs and services.

NOC Number(s): 4155.2
Minimum Education: 2 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: S M I

Duties

In general, correctional services workers in correctional or young offenders centres have the following duties and responsibilities:

- evaluate, classify and assess offenders, develop case plans and provide group and individual counselling
- orient newly-admitted offenders
- prepare offenders for release into the community
- assist in policy development
- perform administrative tasks.

Correctional services workers in a Living Unit environment (inside a correctional residential facility or young offender centre) are also responsible for the behaviour management and security of offenders assigned to their particular living unit.

Correctional services workers usually work in one of the following areas.

Youth workers work in young offender centres or open custody group homes with young people who have been charged under the Youth Criminal Justice Act and have been committed to custody or temporary detention by the courts. In general, youth workers:

- are responsible for security and supervision of daily living routines
- evaluate and assess young offenders and develop, implement and monitor case plans
- provide leisure and recreational activities
- conduct structured group meetings and provide one-to-one counselling
- communicate with probation officers, parents, guardians and others to plan for the release of the young person into the community
- prepare custody progress reports for court reviews of custody sentences.

Living unit officers in a correctional residential facility perform a variety of security and casework duties with adult offenders. They may:

- conduct security checks of the unit
- orient new offenders to the unit
- provide individual counselling, group counselling and referrals
- assist in pre-release and release planning
- maintain records of offenders' behaviour
- escort offenders.

Correctional centre caseworkers usually:

- examine offenders' backgrounds and make recommendations regarding training and individual program plans
- compile and classify personal, educational, employment and criminal information
- develop treatment and program plans
- advise offenders of their rights of appeal and facilitate access to the appropriate resources
- maintain contact with institutional and community resources and government agencies involved with after-release care and rehabilitation of offenders.

Working Conditions

Hours of work and working environments vary considerably depending on the type of work. For example, correctional services workers escorting offenders on day parole may take offenders to visit parents who are in hospital. Institutional staff work shifts.

Physical requirements also vary, depending on the type of position and the employer. Correctional services workers may be required to restrain offenders in some circumstances. Those who conduct security checks and orient new offenders must be ready to respond if a dangerous situation arises.

Personal Characteristics

Correctional services workers need the following characteristics:

- maturity and good judgement
- strong interpersonal skills
- strong verbal and written communication skills for writing and presenting reports.

They should enjoy dealing with and helping people, having clearly defined rules and organized methods, supervising others and encountering situations that entail some stress, risks or the unexpected.

Educational Requirements

(section revised SEPTEMBER 2005)

Entry-level correctional services worker positions generally require a **two year diploma or a university degree in a directly related field.** An equivalent combination of education and experience may be accepted. Candidates for federal government positions must be able to pass the Canada Fitness Test which includes standards for muscular strength and endurance, flexibility and cardio-respiratory fitness. Knowledge of native culture or languages is an asset.

In Alberta, the following post-secondary education institutions offer programs in criminology and correctional services. For information about other related degree programs, see the Psychologist, Sociologist and Social Worker occupational profiles.

- **Athabasca University** offers a Bachelor of Professional Arts degree program in Criminal Justice. Applicants must have an approved two or three year diploma in the criminal justice field from an accredited college or technical institute.
- **Bow Valley College** in Calgary offers a two year Correctional Services diploma program. The entrance requirements are a high school diploma with English 30 (30-1) or 33 (30-2) or equivalent.
- **Columbia College**, a private vocational school in Calgary, offers a full-time 25 week or part-time 50 week Criminal Justice Certificate program and a full-time 25 week or part-time 50 week Criminal Justice Diploma program. The entrance requirements for the Certificate program are a high school diploma with at least 60 per cent in English 30 and Math 30 or equivalent, a successful interview and a criminal record check.
- **Grant MacEwan College** in Edmonton offers a two year Correctional Services diploma program through full-time or part-time study and distance education. Applicants must be at least 18 years of age by the end of the intake term and have a high school diploma with at least 65 per cent in English 30 (or 75 per cent in English 33), or equivalent. Two letters of reference, an autobiography, security clearance and a Standard First Aid certificate are also required.
- **Lethbridge Community College** offers a two year Corrections diploma program and a Bachelor of Applied Arts - Corrections Studies program. The entrance requirement for the diploma program is a high school diploma or equivalent. Applicants are required to undergo testing, submit a resume, complete a questionnaire and attend an interview with a faculty member. Graduates from the diploma program will be accepted directly into the bachelor's program. Students with related credentials and prior related work experience will also be considered. Lethbridge Community College also offers a Criminal Justice certificate designed for aboriginal people.
- **Mount Royal College** in Calgary offers a four year Bachelor of Applied Justice Studies program. Applicants must have an average of at least 60 per cent in five appropriate Grade 12 subjects including English 30, Pure or Applied Math 30 and Social Studies 30.
- The **University of Alberta** in Edmonton offers a four year Bachelor of Arts degree program in criminology. The entrance requirement is completion of one year of an undergraduate degree program (usually an Arts program) with a minimum grade point average of 6.0/9. This is a quota program so higher than minimum marks may be required for admission. Two letters of reference from relevant volunteer experience in criminal justice agencies, a resume, a written statement of career objectives and an interview are required.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

(section revised JANUARY 2006)

Correctional services workers are employed primarily in:

- correctional centres
- young offender centres
- open custody group homes
- community corrections offices.

They may be employed by:

- the federal government
- the provincial government
- private sector social service agencies.

Correctional services workers may advance to supervisory positions or, if they have the required qualifications, transfer to other areas in correctional service.

Correctional services workers are part of the larger National Occupational Classification 4155: Probation and Parole Officers and Related Occupations. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Public Administration**
- **Health Care and Social Assistance**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 350 Albertans are employed in the Probation and Parole Officers and Related Occupations group which is expected to grow grow 1.1 to 2.1 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover. (**Note**: Since correctional services workers form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for correctional services workers.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Probation and Parole Officers and Related Occupations occupational group working part-time or full-time earned from **$20,600 to $68,100 a year.** The average salary was **$45,800 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Related Occupational Profiles

Addictions Counsellor
Child and Youth Care Worker
Life Skills Coach
Parole/Probation Officer
Social Worker

Related High School Subjects

Community Health; Language Arts; Legal Studies; Mathematics; Physical Education; and Social Studies

Related Post-Secondary Fields of Study

Social Sciences, Law and Religious Studies; and Social, Community and Protective Services

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For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Cosmetician

Produced FEBRUARY 2004

Cosmeticians demonstrate and sell cosmetic products and advise customers about their use.

NOC Number(s): 6482.2
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus below average occupational growth in Alberta
Interests: **M S O**

Duties

Cosmeticians serve customers in department stores, drug stores and other retail beauty establishments. In general, they:

- promote and sell skin care and cosmetic products
- help customers identify personal needs and preferences
- advise customers about skin care in general and how to care for problem areas in particular
- advise customers about colours and types of make-up
- show customers how make-up can change their appearance and teach them how to apply cosmetic products
- keep customer records of the services provided and the products purchased
- book appointments for one-on-one demonstrations.

Depending on where they work, cosmeticians may also have responsibilities related to ordering, inventory control and merchandising (for more information, see the Visual Merchandiser occupational profile).

Working Conditions

Cosmeticians work in a retail environment and spend most of their working hours on their feet. Weekend and evening work is usually required, whether cosmeticians work full-time or part-time.

Personal Characteristics

Cosmeticians need the following characteristics:

- good communication and customer service skills
- a good sense of colour
- an interest in skin care and make-up
- the desire to maintain an attractive personal appearance.

They should enjoy:

- taking a methodical approach to compiling information
- serving and assisting people
- using specialized products and techniques.

Educational Requirements

There are **no standard education requirements** for cosmeticians. However, arithmetic skills, a high school diploma or related training are definite assets when seeking employment.

Most cosmeticians are trained on the job or have related post-secondary training. Many cosmeticians working in department stores and drug stores attend on-going training seminars sponsored by the companies that manufacture the products they promote.

People interested in this occupation should discuss their training and employment options with practicing cosmeticians and potential employers. For a list of private vocational schools that offer esthetics programs in Alberta, see the Esthetician occupational profile.

Employment and Advancement

(section revised JANUARY 2006)

Cosmeticians are employed in the cosmetics departments of retail stores.

With additional training, cosmeticians may move into related occupations (for more information, see the Esthetician and Make-up Artist occupational profiles). Some experienced cosmeticians are employed by cosmetic manufacturers as sales representatives. Opportunities to advance to supervisory positions in retail stores are limited.

Cosmeticians are part of the larger National Occupational Classification 6482: Estheticians, Electrologists and Related Occupations. In Alberta, over 75 per cent of people employed in this classification work in the **Repair, Maintenance, Personal and Other Services** industry but most cosmeticians are employed in the **Retail Trade** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Retail Trade industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 3,350 Albertans are employed in the Estheticians, Electrologists and Related Occupations group which is expected to grow 0.5 to 1.5 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 10 to 60 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since cosmeticians form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for cosmeticians.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Cosmeticians generally earn hourly wages or a salary plus commissions.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Estheticians, Electrologists and Related Occupations group working part-time or full-time earned from **$11,100 to $45,500 a year.** The average salary was **$19,600 a year.**

Related Occupational Profiles

Electrologist
Esthetician
Make-Up Artist
Nail Technician
Retail Salesperson
Sales Representative (Wholesale, Nontechnical)

Related High School Subjects

Community Health; Cosmetology Studies; Language Arts; and Mathematics

Related Post-Secondary Fields of Study

Personal and Food Services

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Costume Designer

Produced FEBRUARY 2004

Costume designers plan and create costumes and clothing accessories for theatre, dance, opera, television, video and film productions.

NOC Number(s): 5243.1
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **I M D**

Duties

Duties and responsibilities vary depending on the type of production but, in general, costume designers:

- read and analyze the script
- consult with the director and other designers (set designer, lighting designer, make-up artist) on the production team to develop design concepts
- do research to flesh out design concepts (e.g. geographical setting, time period, characters and their relationships and actions)
- produce drawings and colour renderings of costumes
- meet with the wardrobe manager and head cutter to discuss each design
- purchase fabrics, new or used clothing and accessories
- develop and implement a budget for costume-related expenses
- develop patterns for costumes if necessary
- attend fittings and some rehearsals (for theatre, dance or opera productions).

Depending on the nature, size and complexity of the production, costume designers may have assistants, or construct and fit costumes themselves.

In addition to the duties listed above, costume designers for large film productions:

- hire their own crew
- rent equipment for the workshop/office and onset costume truck
- attend shoots where new costumes are introduced to address desired changes
- wrap up after filming.

Working Conditions

Costume designers often work long hours to meet production deadlines. Their working conditions vary considerably depending on the discipline in which they work (eg. opera, theatre, dance, film) and the project. Some travel may be required to maintain steady employment.

Personal Characteristics

Costume designers need the following characteristics:

- creativity and artistic vision
- flexibility
- the communication and interpersonal skills required to work effectively with others and market their ideas and services
- the ability to work under pressure and the stamina required to work long hours
- the ability and desire to work in a team environment.

They should enjoy synthesizing information, experimenting and finding innovative solutions to problems, doing precise work with tools and equipment, and supervising the work of others.

Educational Requirements

Costume designers must understand colour, fabrics, composition and garment construction. They need **related post-secondary education**, preferably a bachelor's degree or master's degree with courses in drama or broadcasting, and clothing design and construction. Marketing and business-related courses are an asset because most costume designers work on a contract basis. Literature and history courses are also an asset because costume designers must be knowledgeable about period fashions as well as contemporary fashions.

In Alberta, many post-secondary institutions offer performance arts programs (for more information, see the Actor, Dancer and Instrumental Musician occupational profiles), some offer programs specifically related to technical production, broadcasting or film production (see the Set Designer and Film Director occupational profiles) and some offer programs related to fashion design (see the Fashion Designer occupational profile). The following institutions offer programs specifically in costume design:

- During the summer months, the **Banff Centre for the Arts** offers Theatre Production and Design programs for people who already have related training and experience. The Centre also offers Theatre Production Residencies. Applicants must submit a resume and a statement of learning objectives.
- The **University of Alberta** in Edmonton offers a four year Bachelor of Fine Art (BFA) degree program in theatre design. The entrance requirement is an average of 65 to 80 per cent in English 30 and four of the following: Biology 30, Chemistry 30, Pure Math 30, Math 31, Physics 30, Social Studies 30, Science 30, 30-level languages other than English, one fine arts subject. A portfolio, assigned design project and three letters of reference are also required. The University of Alberta also offers a Master of Fine Arts (MFA) degree in theatre design.
- The **University of Lethbridge** offers a four year BFA degree program in drama with a design/technical major. The entrance requirement is an average of at least 60 per cent in English 30, three other appropriate 30 level subjects and a fifth Grade 12 subject.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

(section revised JANUARY 2006)

Costume designers work for:

- theatre companies
- film and television production companies
- opera and dance companies
- festivals.

Some theatre companies employ resident designers but most costume designers freelance and negotiate contracts for specific projects. Therefore, aspiring designers must acquire related experience and develop a portfolio of their work. Some volunteer to design costumes for amateur theatre companies or cable television stations to gain experience. Many gain experience by working in various crew positions and as designers' assistants.

Graduates of design programs usually start as designers for smaller productions or as assistant designers for larger productions. Advancement generally takes the form of more demanding assignments. A few costume designers teach at universities and colleges.

Costume designers are part of the larger National Occupational Classification 5243: Theatre, Fashion, Exhibit and Other Creative Designers. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Professional and Technical Services**
- **Information, Culture and Recreation**
- **Retail Trade**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting funding for the arts
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 600 Albertans are employed in the Theatre, Fashion, Exhibit and Other Creative Designers occupational group which is expected to grow 1.2 to 2.2 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover. (**Note**: Since costume designers form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for costume designers.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Most costume designers are hired on contract for a season or particular production. Fees vary considerably, depending on the production and the designer's reputation.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Theatre, Fashion, Exhibit and Other Creative Designers occupational group working part-time or full-time earned from **$13,100 to $106,500 a year.** The average salary was **$28,900 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Associated Designers of Canada (ADC) website: www.designers.ca

Related Occupational Profiles

Fashion Designer
Home Economist
Human Ecologist
Lighting Designer
Set Designer
Visual Merchandiser

Related High School Subjects

Design Studies; Fashion Studies; Financial Management; Fine Arts (Drama; and Visual Arts); Language Arts; Mathematics; Science; and Social Studies

Related Post-Secondary Fields of Study

Communications; Fine Arts and Performing Arts; and Human Ecology, Fashion and Food Sciences

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For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Craftsperson

Produced OCTOBER 2003

Craftspersons use artistic and manual skills to design and make objects that may be functional, ornamental or communicative.

NOC Number(s): 5244
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **I O M**

Duties

Craftspersons may specialize in designing and creating particular types of crafts or they may work in several media. For example, they may produce:

- clay products such as pottery, sculpture, tiles or art objects
- leaded and stained, flame-worked and blown, cast, fused or other glass objects ranging from beads to architectural installations
- traditional or contemporary jewellery
- metal objects such as furniture, utensils, light fixtures, knives or architectural details from materials such as wrought iron, steel or cast bronze and aluminum
- wood objects such as furniture, tableware, wildlife sculptures, musical instruments or architectural features
- fibre and fabric objects such as quilts, costumes, paper, woven goods or fibre art
- saddles or other leather objects
- ethnocultural or Aboriginal objects such as traditional or contemporary ceremonial objects or dance outfits
- special event items such as Ukrainian eggs or wedding jewellery.

In addition to working in their craft, craftspersons spend a considerable amount of time on business activities such as marketing and accounting.

Working Conditions

Most craftspersons work in home-based studios and set their own hours. Depending on their craft, they may have to observe safety precautions to avoid injury when working with hazardous chemicals, materials or processes.

Personal Characteristics

Craftspersons need the following characteristics:

- a passion for making things
- creative ability and talent
- determination, self-discipline and self-motivation
- good visual, tactile and spatial perception
- mind/hand co-ordination and dexterity.

They should enjoy using knowledge of their media to design and construct new things, and using tools and equipment to do work requiring precision.

Educational Requirements

There are **no standard education requirements** for craftspersons. However, to be successful, they need:

- indepth knowledge of their forms, materials and processes
- knowledge of related history and culture
- the ability to be innovative

- small business skills
- the ability to build a reputation through networking, self-promotion and marketing.

Craftspersons generally acquire their skills by taking related programs or courses and working with master craftpersons. Training programs may be offered by post-secondary institutions, artisan guilds or private studios. For many continuing education courses, there are no specified admission requirements. In some crafts, safety training is extremely important.

In Alberta, the following post-secondary institutions offer fine art programs with the option of a craft focus:

- **Alberta College of Art and Design** in Calgary
- **Medicine Hat College**
- **Mount Royal College** in Calgary
- **Red Deer College** (also offers Series Summer School of the Visual Arts)
- **University of Alberta** in Edmonton
- **University of Calgary**
- **University of Lethbridge.**

Admission requirements for full-time programs vary from one institution to another but generally include a high school diploma with English 30 and four other appropriate Grade 12 subjects, or equivalent. Some institutions specify a minimum acceptable average (60 or 65 per cent) in specified courses and most require submission of a portfolio of previous work.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Alberta post-secondary institutions offer programs related to Aboriginal crafts:

- **Northern Lakes College** in Grouard offers a 10-month Native Clothing Design program. Applicants must demonstrate a working knowledge of the metric system and be able to calculate percentages and interest.
- **Portage College** in Lac La Biche offers a 38-week Native Artisan program. Applicants must have a strong interest in Native Arts and Culture.

For information about other related post-secondary programs, see the Curator, Home Economist, Industrial Designer, Jeweller and Set Designer occupational profiles.

Many craftpersons go out of province or even out of country for advanced study in their field.

Employment and Advancement

(section revised JANUARY 2006)

Most craftspersons are self-employed. They may do custom work, sell wholesale to retail outlets and craft galleries, or market their work directly to the public. Those who market their work directly may sell items from home studios or at craft shows, or arrange to have their work displayed in retail stores, galleries and museums, office buildings and other public spaces. They may also market their work on the Internet or through publications and competitions.

Some craftspersons are employed as instructors by post-secondary institutions, private studios and recreational organizations.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and events affecting the economy as a whole
- **occupational growth** (newly created opportunities)
- **size of the occupation.**

Over 1,600 Albertans are employed in the Artisans and Craftpersons occupational group which is expected to grow 1.7 to 2.7 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 20 to 50 **new** positions will be created each year **in addition** to job openings created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Craftspersons often work in other occupations to supplement their incomes until they have established a market for their products. Incomes for established craftspersons vary considerably.

According to the **Canadian Crafts Federation**, the national average gross income for craftspersons is about **$60,000 per year** which translates to an average **net** income of **$17,300 a year (2003 figures)**.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Artisans and Craftspersons occupational group working part-time or full-time earned from **$16,800 to $58,900 a year.** The average salary was **$30,500 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Craft Council website: www.albertacraft.ab.ca

Canadian Crafts Federation website: www.canadiancraftsfederation.ca

Cultural Human Resources Council website: www.culturalhrc.ca

Related Occupational Profiles

Conservator
Home Economist
Human Ecologist
Industrial Designer
Jeweller
Lighting Designer
Musical Instrument Repair Technician
Painter/Printmaker
Sculptor
Set Designer

Related High School Subjects

Communication Technology; Construction Technologies; Enterprise and Innovation; Fabrication Studies; Fashion Studies; Financial Management; Fine Arts (Visual Arts); Language Arts; Management and Marketing; and Social Studies

Related Post-Secondary Fields of Study

Fine Arts and Performing Arts

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Crane and Hoisting Equipment Operator

Apprenticeship and Industry Training

Produced FEBRUARY 2006

Crane and hoisting equipment operators service and operate the hoist and swing equipment used to move machinery, materials and other large objects.

NOC Number(s): 7371
Minimum Education: Apprenticeship Trade - Grade 10
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: O M I

Duties

Operators manipulate a number of pedals and levers to rotate cranes and raise and lower loads. Some or all of these operations may be performed simultaneously.

In Alberta, there are four types of crane and hoisting equipment operators: wellhead boom truck operators, boom truck operators, tower crane operators and mobile crane operators.

Wellhead boom truck operators set up and operate hydraulic booms used for wellhead pumping, wireline, perforating, coil tubing, snubbing, and the rig-up and rig-out of slant service rig operations.

Boom truck operators (formerly called medium or heavy boom truck operators) set up, service and operate hydraulic booms mounted on turrets affixed to trucks that are capable of moving heavy loads. Certification is required to operate:

- booms (including telescoping booms and articulating booms possessing live lines) capable of swinging, hoisting and booming up and down with a lifting capacity of greater than 4.5 tonnes and less than 40.8 tonnes.
- articulating booms without live lines with a lifting capacity of greater than 7.3 tonnes and less than 40.8 tonnes.

Tower crane operators service and operate travelling, fixed or climbing type hoisting equipment with a vertical mast or tower and a jib. Tower crane operators are often involved in assembling the crane on-site.

Mobile crane operators (including hydraulic and conventional crane mobile operators) service and operate booms which are mounted on crawlers or wheeled frames as well as travelling, fixed or climbing type hoisting equipment with a vertical mast or tower and a jib. Certification is required to operate mobile cranes 13.6 tonnes or more. Mobile crane operators also may:

- drive the crane to the job site
- rig the machine up by pinning the boom and pendant cables and pull the hoist cable in preparation for operation
- set up the machine for the lift by making it level and stable using blocking and levelling materials.

Working Conditions

Crane operators work outdoors, often in noisy, dusty conditions. Operators work in various locations throughout Alberta in all types of weather. A 40-hour, five-day work week is normal, but overtime may be required to meet construction deadlines. There may be some risk of injury due to power line contact, crane overload, falls, weather conditions or manual lifting.

Crane operators may be required to lift items weighing over 25 kilograms.

Personal Characteristics

Crane and hoisting equipment operators need the following characteristics:

- co-ordination and manual dexterity
- the ability to work in high places
- good vision
- the ability to work as part of a team and communicate with ground crews, usually using hand signals and voice

communication
- the ability to travel to different locations.

They should also enjoy working independently when necessary and be capable decision-makers.

Educational Requirements

To work in Alberta, crane and hoisting equipment operators must be registered apprentices or certified journeymen.

To **register** with **Alberta Apprenticeship and Industry Training**, apprentices must:
- have at least an Alberta Grade 10 education (or equivalent) or pass an entrance exam
- find a suitable employer who is willing to hire and train an apprentice. Most employers prefer to hire high school graduates and may select apprentices from among their current employees.

The **terms of apprenticeship** for the different branches of this trade vary.
- **Boom truck operators:** one year (one 12-month period) that includes a minimum of 1,200 hours of on-the-job training and five weeks of technical training.
- **Wellhead boom truck operators:** one year (one 12-month period) that includes a minimum of 100 hours of on-the-job training and three days of technical training.
- **Mobile crane operators:** three years (three 12-month periods) that include a minimum of 1,500 hours of on-the-job training and four weeks of technical training in the first year, a minimum of 1,500 hours of on-the-job training in the second and a minimum of 1,500 hours of on-the-job training and five weeks of technical training in the third.
- **Tower crane operators:** two years (two 12-month periods) that include a minimum of 1,000 hours of on-the-job training and three weeks of technical training in the first year and a minimum of 1,000 hours of on-the-job training in the second year.

There are no apprenticeship programs for **conventional** or **hydraulic mobile crane operators** at this time.

High school students can become apprentices and gain credits toward apprenticeship training and a high school diploma at the same time through the Registered Apprenticeship Program (RAP).

Applicants who have related training or work experience may be eligible for credit or certification.

Only **mobile crane operator** apprentices may attempt the Interprovincial Exam in the final period of their apprenticeship training and, if successful, are granted a Red Seal (which is recognized in most parts of Canada).

Technical training is arranged by Alberta Apprenticeship and Industry. The location of the training varies. Technical training for:
- **boom truck and mobile crane operators** is currently being offered at the Northern Alberta Institute of Technology (NAIT) in Edmonton.
- **wellhead boom truck operators** is currently being offered at Enform (formerly Petroleum Industry Training Service and Canadian Petroleum Safety Council) in Nisku.

Currently, there is **no technical training available** for **tower crane operators**. In lieu of technical training and upon completion of the required on-the-job training and the term of apprenticeship, apprentices may attempt the first period theory and practical examinations (no fee) and if successful, complete the apprenticeship program.

Journeyman mobile crane operators are qualified to operate boom trucks as well as mobile cranes. Journeyman boom truck operators are qualified to operate wellhead boom trucks as well as boom trucks.

Pre-employment programs for prospective apprentices and continuing education programs for journeymen may be offered on an as needed basis by the institution(s) listed above or other schools.

Employment and Advancement

Crane operators are employed by general contractors and subcontractors in the forestry, mining, construction and oil industries and by crane rental companies.

Many crane operators must become members of unions as a condition of employment.

Experienced crane operators may advance to supervisory positions or set up their own crane rental businesses. Alberta certified journeyman crane operators who have the supervisory or management skills required by industry may apply for an Achievement in Business Competencies Blue Seal by contacting Alberta Apprenticeship and Industry Training.

Crane and hoisting equipment operators are part of the larger National Occupational Classification 7371: Crane Operators. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Construction**
- **Oil and Gas Extraction**
- **Mineral Products Manufacturing**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- time of year (for seasonal jobs)
- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 1,850 Albertans are employed in the Crane Operators occupational group which is expected to grow 2.7 to 3.7 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 40 to 70 **new** positions will be created each year **in addition** to job openings created by employment turnover. Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Apprentice **boom truck operators** earn at least 70 per cent of the journeyman wage rate in their place of employment. According to the Alberta Provincial Apprenticeship Committee for this trade, journeyman wage rates vary, but generally range from **$16 to $28 an hour plus benefits** (2005 estimate).

According to the Alberta Provincial Apprenticeship Committee for the **Conventional Mobile Crane Operators** trade, journeyman wage rates vary, but generally range from **$24 to $38 an hour plus benefits** (2004 estimate).

According to the Alberta Provincial Apprenticeship Committee for the **Hydraulic Mobile Crane Operators** trade, journeyman wage rates vary, but generally range from **$24 to $38 an hour plus benefits** (2004 estimate).

Apprentice **mobile crane operators** earn at least 70 per cent of the journeyman wage in their place of employment in the first year, 80 per cent in the second and 90 per cent in the third. According to the Alberta Provincial Apprenticeship Committee for this trade, journeyman wage rates vary, but generally range from **$24 to $38 an hour plus benefits** (2004 estimate).

Apprentice **tower crane operators** earn at least 70 per cent of the journeyman wage in their place of employment in the first year and 85 per cent in the second. According to the Alberta Provincial Apprenticeship Committee for this trade, journeyman wage rates vary, but generally range from **$24 to $38 an hour plus benefits** (2004 estimate).

According to the Alberta Provincial Apprenticeship Committee for the **Wellhead Boom Truck Operator** trade, journeyman wage rates vary, but generally range from **$16 to $28 an hour plus benefits** (2004 estimate).

According to the **2005 Alberta Wage and Salary Survey**, part-time or full-time starting salaries for Albertans working in the Crane Operators occupational group ranged from **$27,700 to $157,000 a year.** After three years, salaries ranged from **$35,800 to $203,200 a year.** The average salary was **$73,700 a year**.

Other Sources of Information

Alberta Apprenticeship and Industry Training website: www.tradesecrets.org

Alberta Construction Industry "Trade Up!" website: www.careersconstruction.com

Calgary Construction Association website: www.cca.cc

Construction Sector Council website: www.csc-ca.org

Related Occupational Profiles

Heavy Equipment Operator
Power Lineman
Water Well Driller
Well Service Equipment Operator

Related High School Subjects

Construction Technologies; Energy and Mines; Fabrication Studies; Forestry; Language Arts; and Mechanics

Related Post-Secondary Fields of Study

Trades, Industrial and Related Training

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Creative Writer

Produced MAY 2005

Creative writers write literary works such as novels, short stories, essays, poetry, magazine articles and scripts for radio, television, theatre, film and video productions.

NOC Number(s): 5121.1
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **I M d**

Duties

Creative writers may write fiction such as short stories, scripts, novels or poetry, or nonfiction such as articles, biographies or essays. In general, they:

- research similar publications such as the magazines to which they would like to submit work (particularly for nonfiction works)
- write and rewrite their work until they and their editors or producers are satisfied with it
- initiate and maintain contact with appropriate publishers or producers
- market their work
- negotiate fees and royalties (for book-length manuscripts or feature-length scripts for film, writers may hire agents to act for them)
- may work with graphic artists or illustrators for book covers and other graphics.

Writers of novels and poetry usually finish writing their works before looking for a publisher. Nonfiction writers usually send query letters or proposals to editors before completing articles or books. Although some established television scriptwriters are assigned individual stories or entire series, most scriptwriters submit story ideas to producers hoping to get a contract for the finished script.

Fiction writers often do a considerable amount of public relations work such as book tours and readings of their work.

Scriptwriters often attend rehearsals for radio and theatre productions, or taping sessions for video productions, and work closely with directors and producers to ensure that facts and ideas are presented accurately.

Working Conditions

Creative writers spend much of their time working on their own, researching in libraries and on the Internet, and writing (at home or in an office). They are in regular contact with agents and publishers, and may spend some time interviewing people.

Freelance writers set their own hours. The pressure of deadlines, long solitary hours, unwilling publishers and sporadic work can be stressful.

Personal Characteristics

Creative writers must be able to express ideas clearly in writing. They also need:

- knowledge of their interest area and the ability to learn new things quickly
- outstanding research and organizational skills
- good interviewing skills
- the self-discipline required to work on their own and meet deadlines
- the ability to market their work.

They should enjoy gathering and synthesizing information, taking a methodical approach to writing, and informing or entertaining an audience through their writing.

Educational Requirements

Creative writers come from a wide variety of backgrounds. They must have a solid grasp of grammar and spelling, and be able to use language accurately, effectively and creatively. Particularly in the early stages of their careers, writers may participate in writing groups or attend writing workshops and conferences to develop their research and writing skills and polish their craft.

Post-secondary education does not ensure success but it helps to develop research and writing skills, organizational skills and professional contacts. A related diploma or degree also may give writers the credentials required to supplement their incomes by working in related occupations (for more information, see the Advertising Copywriter, Reporter, Technical Writer and Editor occupational profiles).

English, communications and other writing-related programs are offered by post-secondary institutions throughout Alberta. Entrance requirements vary but generally include a high school diploma with a minimum average (60 to 70 per cent depending on the program) in English Language Arts 30-1 (or English 30) and four other appropriate Grade 12 subjects (e.g. social studies, math, second language or science courses). Specific course requirements vary from one program to another. Keyboarding skills, a portfolio of written work, testing or an interview also may be required. For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Creative writing courses are offered by organizations such as the Canadian Authors Association, the Alberta Romance Writers' Association and the Writers Guild of Alberta, community-based writing organizations, the extension departments of colleges and universities, and the continuing education divisions of school systems.

Employment and Advancement

(section revised JANUARY 2006)

Creative writers may publish and market their work themselves or submit their work to publishers. Fiction writers and poets often do other types of writing as well or work in other occupations to supplement their incomes. Poetry in particular receives more admiration than financial reward but poets may sell their work to literary journals, greeting card companies or magazine publishers. They also may market their work through "autograph parties" or websites.

Writers of magazine articles may be employed by or do freelance work for the publishers of national, regional or specialty magazines (e.g. religious or recreation-related publications). Freelance periodical writers may sell an article to more than one magazine although this requires good negotiation skills and a solid understanding of copywright law.

Creative writers are part of the larger National Occupational Classification 5121: Authors and Writers. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Information, Culture and Recreation**
- **Professional and Technical Services**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 2,450 Albertans are employed in the Authors and Writers occupational group which is expected to grow 1.0 to 2.0 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 20 to 50 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since creative writers form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for creative writers.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Considering the number of hours, sometimes years, creative writers may spend on their works before getting any financial return from them, writers often earn very little. For this reason, many successful freelance writers are also involved in business and technical writing, teaching, editing or doing voice-overs (reading scripts for radio).

Freelancer writers must negotiate their own fees unless minimum rates of pay for writers have been set by a union such as the Alliance of Canadian Cinema, Television and Radio Artists (ACTRA) or the Periodical Writers' Association of Canada (PWAC). Freelancers may be paid by the hour or by the word (this is common in magazines), or they may be paid a flat rate. Freelance screen writers are usually paid on a split-fee basis: one third in advance, one third after the first draft and the balance upon completion.

Writers whose adult fiction books have been published usually receive **up to 10 per cent of the total book sales,** more if they are celebrated and successful authors. They may receive an advance based on projected sales revenue from the book, depending on the genre (history, business, reference, children's book, etc.) and the reputation of the writer.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Authors and Writers occupational group working part-time or full-time earned from **$15,300 to $85,400 a year.** The average salary was **$42,600 a year.**

Other Sources of Information

Alliance of Canadian Cinema, Television and Radio Artists (ACTRA) website: www.actra.ca

Alberta Romance Writers' Association website: www.albertaromancewriters.com

Canadian Authors Association website: www.canauthors.org

Canadian Poetry Association website: www.canadianpoetryassoc.com

Canadian Romance Authors Network website: www.canadianromanceauthors.com

Canadian Society of Children's Authors, Illustrators and Performers website: www.canscaip.org

Crime Writers of Canada website: www.crimewriterscanada.com

League of Canadian Poets website: www.poets.ca

Periodical Writers Association of Canada website: www.pwac.ca

Playwrights Guild of Canada website: www.playwrightsguild.com

Stroll of Poets Society (Edmonton) website: www.strollofpoets.com

Writers Guild of Alberta website: www.writersguild.ab.ca

Writers Guild of Canada website: www.writersguildofcanada.com

Writers Union of Canada website www.writersunion.ca

Related Occupational Profiles

Advertising Copywriter
Critic
Editor
Public Relations Representative
Songwriter
Technical Writer

Related High School Subjects

Communication Technology; Financial Management; Language Arts; Management and Marketing; and Social Studies

Related Post-Secondary Fields of Study

Communications; and Humanities and Languages

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Credit/Loans Manager

Produced NOVEMBER 2005

Credit managers gather and analyze financial information about loan applications and business conditions, and approve or reject credit applications. They work in credit-granting organizations such as oil companies, banks, credit unions, retail stores, hotels and finance companies.

NOC Number(s): 0122.2
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **D M S**

Duties

Credit managers ensure that those who want to borrow money are a safe financial risk to the organization. Many organizations offer loans and/or credit services to individuals (consumer credit) and businesses (commercial credit).

In smaller firms, credit managers may be responsible for cash management, profitability and portfolio growth as well as:

- accepting applications for credit
- checking credit ratings with credit bureaus and reporting agencies, and payment experiences with other suppliers
- granting or refusing credit
- setting up repayment schedules
- handling complaints
- collecting past-due accounts.

In larger firms, credit managers may:

- supervise a staff of credit personnel
- interview, hire and train employees
- help senior managers set credit policies, credit lines, procedures and standards.

Many larger organizations have credit operations in which the department that authorizes credit for higher level accounts is separate from the department that collects outstanding accounts. Different credit managers may be responsible for each department.

Working Conditions

Credit managers usually work in an office environment and may work long hours. They deal with people constantly, including staff members, people in business and industry, and the public. Commercial credit managers may travel to firms or plants to interview prospective borrowers and assess business operations.

Personal Characteristics

Credit managers need the following characteristics:

- integrity and honesty
- the ability to make independent decisions
- good negotiation skills
- organizational ability
- an aptitude for analyzing financial details and understanding financial reports
- accuracy and precision in dealing with figures
- persuasive persistence
- good oral and written communication skills
- problem-solving skills.

They should enjoy supervising and co-ordinating the work of others, having clear rules and methods to guide their activities and working with people.

Educational Requirements

Employers generally prefer to hire credit managers who have related post-secondary education in fields such as economics, finance, business, accounting or agriculture. Suitable programs are offered by institutions located throughout Alberta. The following post-secondary institutions offer finance-related degree programs:

- **Athabasca University**, which has an open admissions policy, offers four year Bachelor of Commerce and Masters in Business Administration (MBA)programs via distance education.
- **Concordia University College of Alberta** in Edmonton offers a four year Bachelor of Management degree program.
- **Grande Prairie Regional College** offers a four year Bachelor of Commerce degree program in collaboration with Athabasca University. Grande Prairie Regional College provides the classroom study and the degree is granted through Athabasca University.
- **The King's University College** in Edmonton offers a four year Bachelor of Commerce degree program.
- **Lakeland College** in Vermilion offer a Bachelor of Applied Financial Services degree program. The entrance requirement is successful completion of a two year diploma in Business Administration.
- **Mount Royal College** in Calgary offers a Bachelor of Applied Financial Services degree program. The entrance requirement is successful completion of a two year diploma in Business Administration.
- The **Northern Alberta Institute of Technology (NAIT)** in Edmonton offers a Bachelor of Applied Business Administration - Finance degree program. The entrance requirement is successful completion of a two year diploma in Business Administration with specified courses and a minimum GPA of 65 per cent, 2.3, 6 or C+.
- The **University of Alberta** in Edmonton offers four year and five year (co-op) Bachelor of Commerce degree programs and MBA programs with a specialization in finance. The entrance requirement for the bachelor's degree program is a pre-professional year with specific courses.
- The **University of Calgary** Haskayne School of Business offers four year and five year (co-op) Bachelor of Commerce and MBA programs with specializations in finance.
- The **University of Lethbridge** offers a four year Bachelor of Management degree program and post-diploma programs with a specialization in finance.

One and two year university transfer programs are offered by post-secondary institutions throughout the province.

First year admission requirements for university and university transfer programs vary from one institution to another but generally include a high school diploma (or equivalent) with a competitive average of at least 60 per cent (over 70 per cent for some programs) in English Language Arts 30-1 (or English 30), Pure Math 30 (or Math 30) and three other approved Grade 12 subjects.

Two year financial planning or services diploma programs are offered by the following Alberta post-secondary institutions:

- **Lakeland College** in Vermilion
- **Medicine Hat College**
- **Northern Alberta Institute of Technology (NAIT)** in Edmonton
- **Red Deer College**.

Business administration and management programs are offered by:

- **Alliance University College** in Calgary
- **Athabasca University**
- **Canadian University College** in College Heights
- **Grande Prairie Regional College**
- **Keyano College** in Fort McMurray
- **The King's University College** in Edmonton
- **Lakeland College** in Vermilion and Lloydminster
- **Lethbridge Community College**
- **Medicine Hat College** in Medicine Hat and Brooks
- **Mount Royal College** in Calgary
- the **Northern Alberta Institute of Technology (NAIT)** in Edmonton and at various locations
- **Northern Lakes College** in Grouard and other locations
- **Portage College** in Lac La Biche
- **Red Deer College**

- the **Southern Alberta Institute of Technology (SAIT)** in Calgary.

Minimum admission requirements for financial planning and business administration programs vary but generally include a high school diploma with a specified minimum average or minimum marks in particular courses (e.g. Grade 12 English).

Continuing education programs are often offered on an as needed basis.

For current information on specific programs and their admission requirements, please check post-secondary calendars or websites.

The **Credit Institute of Canada** offers a four year Credit Management program that may be taken by correspondence through the School of Continuing Studies at the University of Toronto or by taking evening courses at the University of Alberta, the University of Calgary or NAIT. Some courses are available in day programs. To qualify for the Fellow of the Credit Institute (FCI) designation, students must:

- successfully complete the Credit Management program
- have at least five years of practical experience in credit and financial management
- maintain an annual national membership in the Institute.

The **Credit Union Institute of Canada** offers a 13 course Management Studies program leading to the designation Associate of the Credit Union Institute of Canada (ACUIC). Applicants for the program must be employed in a credit union or affiliated organization. To qualify for the designation, graduates of the program must have at least five years of related experience.

Organizations often have in-house training programs to help those in junior positions develop the skills needed to become credit managers. Trainees may work closely with experienced credit managers while working through the program.

Employment and Advancement

(section revised JANUARY 2006)

Credit managers are employed by organizations such as:

- industrial corporations and wholesalers
- large retail stores and retail chains
- commercial lending institutions
- banks, credit unions and trust companies
- finance companies
- reporting agencies and credit bureaus
- government treasury departments.

Depending on their qualifications, experienced credit managers may advance to senior positions in management, marketing or administration.

Credit/loans managers are part of the larger National Occupational Classification 0122: Banking, Credit and Other Investment Managers. In Alberta, over 75 per cent of people employed in this classification work in the **Finance, Insurance and Real Estate** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Finance, Insurance and Real Estate industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Employment growth is best for investment managers.

Over 4,100 Albertans are employed in the Banking, Credit and Other Investment Managers occupational group which is expected to grow 1.3 to 2.3 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 50 to 100 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since credit/loans managers form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for credit/loans managers.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Credit managers' salaries vary widely, depending on the size and nature of the employing organization and the training and responsibilities of the employee. Credit managers in commercial credit tend to earn higher salaries than managers in consumer credit organizations.

According to the **2005 Alberta Wage and Salary Survey**, part-time and full-time **starting** salaries for Albertans working in the Banking, Credit and Other Investment Managers occupational group ranged from **$23,500 to $109,500 a year.** The average salary was **$68,200 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Canadian Securities Institute website: www.csi.ca

Credit Institute of Canada website: www.creditu.com

Credit Union Institute of Canada website: www.cuic.ca

Investment Dealers Association website: www.ida.ca

Related Occupational Profiles

Banking/Investment Manager
Collection Agent
Mortgage Agent

Related High School Subjects

Communication Technology; Enterprise and Innovation; Financial Management; Information Processing; Language Arts; Legal Studies; Management and Marketing; and Mathematics

Related Post-Secondary Fields of Study

Agriculture and Related Technologies; Business, Management and Administrative Studies; and Social Sciences, Law and Religious Studies

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For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Critic

Produced MAY 2005

Critics review and analyze artistic and literary works and live performances. They may communicate their opinions via radio, television, newspapers, magazines, websites or books.

NOC Number(s): 5123
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus below average occupational growth in Alberta
Interests: I S M

Duties

Critics review all facets of the arts and entertainment field: plays, films, books, operas, art exhibits, dance productions, musical recordings, concerts and nightclub acts. In general, they:

- attend performances or exhibits or preview books or recordings
- summarize the theme or story
- critique the quality of the performance or artistic work based on their judgement, experience and knowledge
- conduct interviews with performers, artists and writers
- educate the public by providing insights and background knowledge about the arts.

Critics may write or broadcast regular arts and entertainment features which include interviews with artists, in-depth analyses or information about upcoming events or new artistic works.

Most critics specialize in one area of the arts such as music, film or theatre. Some specialize even further in a particular aspect of a field. For example, a large newspaper may have a jazz music critic, a rock music critic and a classical music critic. However, critics working for smaller employers may be responsible for reviewing a wide range of performances and artistic works.

To keep up to date on trends in the arts and entertainment field, critics must spend a considerable amount of time reading, building contacts in their industry and keeping in touch with these people.

Working Conditions

Critics work evenings, weekends and holidays to cover performances, exhibits and events. Having to cope with tight deadlines and disgruntled readers can be stressful.

Personal Characteristics

Critics need the following characteristics:

- a strong interest in their field
- analytical and perceptive skills
- strong research and organizational skills
- flexibility in appreciating new techniques and styles in the arts
- objectivity and fairness in reviewing productions at different levels (professional or amateur)
- the ability to communicate clearly, concisely, objectively and in a strong personal voice
- the ability to handle criticism from others and the confidence required to stand behind their opinions
- the ability to produce creative, entertaining pieces under the pressure of deadlines.

They should enjoy finding innovative ways to express their views, stimulating public interest and discussion, and being recognized for their specialized knowledge, creativity and experience.

ducational Requirements

ough it is not necessary to have formal training to become a critic, most employers prefer to hire experienced print orters or broadcasters (who often have post-secondary education related to journalism). Critics also are expected to e strong backgrounds in their area of specialization (e.g. music, literature, art, drama). Being able to review several erent fields is an advantage, especially for freelance critics and those just getting started.

-secondary institutions located throughout the province offer suitable degree programs in communications studies, adcasting, music, art and drama. Entrance requirements vary but generally include a high school diploma with a imum average (60 to 80 per cent depending on the program) in English Language Arts 30-1 and four r appropriate Grade 12 subjects (e.g. social studies, math, a second language or science courses). Specific course irements vary from one program to another (e.g. Social 30 is required for some communications/broadcasting grams).

y post-secondary institutions also offer university transfer programs which allow students to apply up to two years of y toward Bachelor's degree programs at other institutions. It is the student's responsibility to ensure that the courses choose to take will be accepted for credit at the institution to which they wish to transfer.

current information about programs, admission requirements and mature student admission policies, please check -secondary calendars or websites.

nployment and Advancement

(section revised JANUARY 2006)

ics may work for:

- newspapers
- magazines
- alternative weeklies
- radio stations
- television stations
- Internet services.

re are relatively few jobs in the field of arts criticism and competition for employment is keen. Major metropolitan spapers and large circulation magazines hire a small number of critics as staff writers. They also may hire freelance cs to provide reviews and commentaries on specialized areas of the arts. Smaller newspapers and magazines usually loy freelance critics. Staff writers may be expected to cover a wide range of arts events.

io and television stations that have film, theatre and music reviews as part of their regular weekly programming may staff reviewers or freelance critics for these weekly features. Freelance critics sell their articles and interviews to ous print and broadcast media, and are paid for each article printed or aired.

difficult to get started as a critic or reviewer. Experience might come from writing for campus and community spapers or doing film or theatre reviews for local cable television stations. Aspiring critics should attend as many arts entertainment functions as possible and keep up to date in their field of interest.

e critics start out as general reporters or staff writers and eventually move into a reviewer's position when one comes n. Established critics can move to larger newspapers, work in radio or television or syndicate articles to a chain of spapers or broadcast stations.

ics are part of the larger National Occupational Classification 5123: Journalists. In Alberta, most people employed in classification work in the **Information, Culture and Recreation** industry.

employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Information, Culture and Recreation industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

r 1,600 Albertans are employed in the Journalists occupational group which is expected to grow 0.5 to 1.5 per cent n year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover. (**Note**: Since cs form only a part of the larger occupational group on which this forecast is based, only a portion of the new tions created will be for critics.)

loyment turnover is expected to increase as members of the baby boom generation retire over the next five to ten rs.

Salary

(section revised OCTOBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Journalists occupational group working part-time or full-time earned from **$18,900 to $59,300 a year.** The average salary was **$43,100 a year.**

Other Sources of Information

(section revised JUNE 2005)

EDinfo website: www.alis.gov.ab.ca/edinfo

Canadian Theatre Critics Association (CTCA) website: www.canadiantheatrecritics.ca

Related Occupational Profiles

Creative Writer
Editor
Reporter

Related High School Subjects

Fine Arts (Dance; Drama; Music; and Visual Arts); Language Arts; and Social Studies

Related Post-Secondary Fields of Study

Communications; Fine Arts and Performing Arts; and Humanities and Languages

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For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Curator

Produced SEPTEMBER 2003

Curators acquire, document, study, interpret, maintain and provide access to collections of artifacts (products of human hands) and/or specimens (natural history items). In smaller museums, historic sites or galleries, they may be responsible for the overall management of the facility. In larger institutions, curators are usually responsible for specific collections or represent particular academic disciplines.

NOC Number(s): 5112.2
Minimum Education: 4 years post-secondary education/training
Employment Outlook: Employment turnover plus below average occupational growth in Alberta
Interests: **D M I**

Duties

Most curators specialize in human history artifacts, natural history specimens, or art objects. However, in smaller facilities, they may be responsible for all collections.

Duties and responsibilities vary considerably from one position to another but, in general, curators:

- develop collections policies and initiate and/or supervise collection development and research by studying the subject area(s) of the museum's collections and locating suitable objects within the community or through field work (e.g. archaeological excavations) or through other museums, private collectors, artists, dealers and potential donors
- conduct or supervise an acquisitions program in which objects and their stories are selected or collected
- develop and manage a collections management program that includes acquiring, researching, documenting, storing and cataloguing objects/specimens, and determining which objects will be maintained for display and storage
- ensure acceptable environmental conditions are maintained for storage, provide access to objects for research and study, and ensure that collections are preserved (or delegate this work to conservators)
- plan and assume a major role in organizing exhibitions by conducting research, determining themes, selecting materials and acting as consultants regarding the overall design (in some cases, this may involve establishing specifications criteria for reproductions, and overseeing their manufacture or selecting items from commercially available replica sources)
- prepare catalogues, display labels, grant applications, articles, texts/scripts and promotional publications related to exhibitions and the museum's collections in general
- participate in the development of programs and special events for visitors and students
- promote knowledge and study of the collection through lectures, tours, workshops, exhibitions and websites
- train, supervise and coordinate the work of junior staff and volunteers.

In smaller facilities, curators may also manage overall operations, deliver educational and public programs, co-ordinate special events, work with local media and governments, and participate in fundraising activities.

Working Conditions

Curators work in offices, storage areas and exhibition galleries, in the community at large and in the field (e.g. at archaeological sites). Their hours of work vary and often include evenings and weekends.

Curators are sometimes required to lift items weighing up to 25 kilograms.

Personal Characteristics

Curators need the following characteristics:

- a natural curiosity and a passionate interest in art, natural history or human history
- excellent research skills
- excellent oral and written communication skills
- good interpersonal and teamwork skills.

They should enjoy advising and co-ordinating the work of others, taking a methodical approach to their work and finding innovative solutions to problems. Those who work in smaller facilities should enjoy variety and multitasking.

Educational Requirements

In Alberta, there is no standard education requirement for curators but most facilities prefer to hire job applicants who have at least a **bachelor's degree in a related field of study.** Medium and larger institutions generally prefer to hire applicants who have a **master's degree** in a field such as museum studies, history, archeology, fine arts, art history, anthropology, botany, zoology or geology. Since this field is small and competitive, **graduate work at the doctoral level** is often required for employment in a large museum or university.

Post-secondary institutions throughout Alberta offer undergraduate Bachelor degree programs in appropriate fields. Entrance requirements generally include an average of 60 to 80 per cent in 30 level English, mathematics, science, second language or social studies courses.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

The **University of Calgary** offers a 300 hour Heritage Resource Management certificate program through Continuing Education that includes 124 hours of workplace practicum. The entrance requirement is a high school diploma but consideration will be given applicants who do not have a high school diploma. Applicants should have significant related experience.

Museums Alberta offers a Certificate in Museums Studies program that includes eight core courses.

Outside of Alberta, the following institutions offer programs specifically related to curatorship:

- **Algonquin College** in Ottawa offers a three-year Applied Museum Studies diploma program.
- **Sir Sandford Fleming College** in Peterborough offers a four semester Collections Conservation and Management diploma program and a three semester Museum Management and Curatorship post-diploma program.
- the **University of Victoria** Department of History in Art offers a Bachelor of Arts degree program with a specialization in museum studies. The university also offers a post-graduate Cultural Resource Management diploma program through on-campus and distance education courses.
- the **University of Toronto**, the **University of Montreal** and the **University of Quebec** in Montreal offer master's degree programs in museum studies.

Employment and Advancement

(section revised JANUARY 2006)

Curators work in public and private museums, historic sites, universities, art galleries, zoos, botanical gardens and other related facilities. They may be employees or work as private contractors.

There are over 250 museums, historic sites, art galleries and zoos in Alberta. Some are seasonal; others are open year round. In medium and large facilities, curators usually start in junior positions and advance to more senior positions. When applying for a junior position, related volunteer or paid work experience and courses in museum studies are definite assets.

Curators are part of the larger National Occupational Classification 5112: Conservators and Curators. In Alberta, over 75 per cent of people employed in this group work in the following industries:

- **Information, Culture and Recreation**
- **Educational Services**
- **Repair, Maintenance, Personal and Other Services**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 200 Albertans are employed in the Conservators and Curators occupational group which is expected to grow 0.3 to 1.3 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover. (**Note**: Since curators form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for curators.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Salaries vary, depending on the nature of the organization (government or not-for-profit society), the size of the facility, the responsibilities of the position and the qualifications of the curator.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Conservators and Curators occupational group working part-time or full-time earned from **$15,000 to $67,100 a year.** The average salary was **$59,100 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Museums Alberta website: www.museumsalberta.ab.ca

Related Occupational Profiles

Anthropologist
Archaeologist
Archivist
Conservator
Heritage Interpreter
Historian
Museum Technician

Related High School Subjects

Communication Technology; Language Arts; Management and Marketing; Mathematics; Science (Biology; and Chemistry); Social Studies; and Tourism Studies

Related Post-Secondary Fields of Study

Fine Arts and Performing Arts; Humanities and Languages; Sciences; and Social Sciences, Law and Religious Studies

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For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Custodian

Produced JUNE 2003

Custodians clean building interiors, furnishings and equipment.

NOC Number(s): 6663
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus below average occupational growth in Alberta
Interests: **M O I**

Duties

Custodians may perform light duties or heavy duties.

Light duty cleaners:

- empty garbage containers and ashtrays
- service and clean washrooms
- dust and polish furniture
- wash and polish glass
- spot wash walls
- vacuum carpets
- sweep or damp mop floors.

Heavy duty cleaners:

- steam clean or shampoo carpets
- sweep, wet mop and scrub floors
- strip, seal, finish and polish floors
- remove waste materials from buildings
- wash walls and ceilings
- move heavy furniture, equipment and supplies.

Custodians may do all of the above or specialize in a particular area. They are often responsible for ensuring that all doors are locked and electrical items are turned off or unplugged.

School custodians also check and perform minor maintenance on heating and cooling equipment (e.g. change filters).

Industrial plant cleaners perform regular cleaning duties and ensure that machinery is free of lint and dust and excess oil and grease. They may also use a hand truck to transfer raw materials and semi-finished products between departments or buildings.

Working Conditions

Many cleaning duties are carried out in the late afternoon or evening when daytime employees have left the building. Custodians may work part-time on a nightly, weekly or monthly basis, or work full-time eight-hour shifts.

Custodians may be required to lift furniture and equipment weighing up to 25 kilograms. They usually work indoors, although some outdoor work may be required to clean sidewalks and driveways, or clean building exteriors.

Personal Characteristics

Custodians need the following characteristics:

- the ability to work on their feet for a complete shift while constantly bending, stretching, walking and lifting or moving things
- the ability to communicate effectively with others.

They should enjoy taking a methodical approach to their work and using equipment such as vacuum cleaners and floor polishers.

Educational Requirements

Most custodians are **trained on the job**. They need to know which cleaners to use for different purposes and which cleaning chemicals can be mixed safely.

There are no standard formal education requirements for custodians. However, employers may require job applicants to have one or more of the following:

- WHMIS (Workplace Hazards Management Information System) training
- letter of clearance from the police
- other security checks (e.g. Child Welfare Records check, Protection for Persons in Care Act screening requirements)
- a passing grade on an English literacy screening test.

Industrial positions may require related safety training such as CSTS (Construction Safety Training System).

NorQuest College in Edmonton offers a seven-week Building Service Worker program that includes two weeks of work experience. This program may also be taken part-time over 13 weeks. Applicants must be physically able to perform required tasks. Grade 8 English or GED recommended.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

(section revised JANUARY 2006)

Custodians are employed by:

- private janitorial firms
- municipal, provincial and federal governments
- health authorities
- school boards
- apartment building owners
- banks
- retail outlets.

Custodians may subcontract their services or become contractors themselves. Many positions are part-time and competition for better paying jobs is keen.

There are limited opportunities for advancement to supervisory or inspector positions.

Custodians are part of the larger National Occupational Classification 6663: Janitors, Caretakers and Building Superintendents. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Management, Administrative and Other Support Services**
- **Educational Services**
- **Finance, Insurance and Real Estate**
- **Health Care and Social Assistance**
- **Accommodation and Food Services**
- **Repair, Maintenance, Personal and Other Services**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 22,850 Albertans are employed in the Janitors, Caretakers and Building Superintendents occupational group which is expected to grow 0.5 to 1.5 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 110 to 350 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since custodians form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for janitors and cleaners.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Hourly wages for custodians vary considerably.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Janitors, Caretakers and Building Superintendents occupational group working part-time or full-time earned from **$10,800 to $70,400 a year.** The average salary was **$23,400 a year.**

Other Sources of Information

Post-secondary institution calendar and website (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Institute of Inspection, Cleaning and Restoration Certification website: www.iicrc.org

Related Occupational Profiles

Auto Detailer
Building Operator
Building Superintendent
Carpet and Upholstery Cleaner
Room/Housekeeping Attendant

Related High School Subjects

Physical Education

Related Post-Secondary Fields of Study

Trades, Industrial and Related Training

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Customer Support Analyst

Produced JULY 2004

Customer support analysts answer computer-related questions, investigate complaints and work with others in a team environment to resolve users' software and hardware problems.

NOC Number(s): 2282
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: **M S o**

Duties

Duties and responsibilities vary in this rapidly evolving occupation but, in general, customer support analysts:

- respond to telephone calls from users who are experiencing computer-related problems or who need assistance using a particular software application (e.g. a spreadsheet, graphic, database, e-mail or word processing application)
- apply their knowledge of computer operations, software and hardware to answer questions
- ask questions to determine what is causing users' problems, walk users through possible solutions and diagnostic procedures, or attempt to duplicate errors on their own computers
- identify possible causes or consult other computer experts to research the problem and develop solutions
- explain software errors to computer programmers and recommend changes to programs
- arrange to have defective software and hardware products replaced or repaired
- keep their knowledge and skills up to date by communicating with other computer experts (electronically and in person), reading manuals and trade magazines and attending computer trade shows and seminars.

Depending on the employing organization, customer support analysts may also:

- test hardware and software
- train users on new applications
- install and maintain hardware, software and peripheral equipment (e.g. printers, scanners)
- conduct office automation feasibility studies (for more information, see the Information Systems Consultant occupational profile).

Customer support analysts generally specialize in the types of users they assist and/or the types of problems they deal with.

Working Conditions

Customer support analysts work in an office environment. They may work standard office hours or work shifts, including evenings and weekends, to ensure that someone is available to assist users whenever they need help. Overtime may be required to meet deadlines or to identify the source of a computer problem. Customer support analysts are occasionally required to be on call.

Some travel may be required if users are scattered in various locations. Analysts who install hardware may be required to lift heavy computer components.

Personal Characteristics

Customer support analysts need the following characteristics:

- a good speaking voice and excellent communication skills
- the ability to think logically and analyze complex problems
- the ability to pay attention to details and use abstract logic at the same time
- the ability to remain patient and persistent when dealing with frustrating problems and frustrated users
- the ability to get along with all kinds of people

- the ability to work well under pressure and meet deadlines
- the ability to work independently as well as in a team environment.

People in this occupation should enjoy work that involves analyzing problems and finding innovative solutions, taking a methodical approach to work that requires precision and taking responsibility for projects.

Educational Requirements

(section revised NOVEMBER 2005)

Most customer support analysts have completed a **post-secondary education program in computer science or a related discipline**. There are a wide variety of related three year and four year degree programs, two year diploma programs and one year certificate programs offered by universities, colleges, technical institutes and private vocational schools in Alberta. After graduation, analysts must continuously upgrade their knowledge.

Before enrolling in an education or training program, prospective customer support analysts should:

- decide what type of work they want to do (and in what industry)
- talk to potential employers about required and preferred qualifications.

In Alberta, the following post-secondary education institutions offer programs that may provide suitable training for this type of work:

- **Academy of Learning**, a private vocational school in Airdrie, Calgary, Edmonton, High River, Lethbridge, Medicine Hat, and Red Deer
- **Athabasca University** (distance education program)
- **CDI College of Business and Technology**, a private vocational school in Calgary and Edmonton
- **Concordia University College of Alberta** in Edmonton
- **DeVry Institute of Technology**, a private vocational school in Calgary
- **Grande Prairie Regional College**
- **Grant MacEwan College** in Edmonton
- **HCC Computer Training Centre and Computer Career College**, a private vocational school in Spruce Grove
- **The King's University College** in Edmonton
- **Lakeland College** in Lloydminster
- **Lethbridge Community College**
- **Medicine Hat College**
- **Mount Royal College** in Calgary
- **NorQuest College** in Edmonton
- **Northern Alberta Institute of Technology** in Edmonton
- **Prestwick College**, a private vocational school in Calgary
- **Red Deer College**
- **Southern Alberta Institute of Technology (SAIT)** in Calgary
- the **University of Alberta** in Edmonton and Camrose
- the **University of Calgary**
- the **University of Lethbridge**.

In general, the admission requirement for the university programs (other than Athabasca University) is a high school diploma or equivalent with an acceptable average (ranging from 60 to 70 per cent depending on the program) in English 30, Pure Math 30 and three other approved 30-level subjects (Math 31 and Physics 30 recommended). Admission to college and technical institute programs generally requires a high school diploma or equivalent with English 30 or 33 and Pure Math 30 (or a minimum average in English 33 or Applied Math 30) or mature student status.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

(section revised JANUARY 2006)

Customer support analysts are employed by:

- large organizations that have their own Information Technology departments
- consulting firms that provide technical support services for other organizations.

In some organizations, customer support analysts are the first tier in a two-tier or three-tier support system. They provide initial response services and refer problems requiring greater expertise to technical support analysts.

Customer support analysts may advance to technical support analyst positions, client support analyst positions (providing on-site support for new business applications) and supervisory positions. They may also move into related occupations such as computer and network operator, systems testing technician or web technician. Those who have the required qualifications may move into computer programmer, database analyst, quality assurance analyst or web designer positions.

Customer support analysts are part of a larger computer systems analysts occupational group. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Professional and Technical Services**
- **Public Administration**
- **Finance, Insurance and Real Estate**
- **Oil and Gas Extraction**
- **Information, Culture and Recreation**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation**.

Over 3,000 Albertans are employed in the User Support Technicians occupational group which is expected to grow 2.1 to 3.1 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 60 to 100 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since customer support analysts form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for customer support analysts.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Salaries for customer support analysts vary depending on their qualifications and the responsibilities of their positions.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the User Support Technicians occupational group working part-time or full-time earned from **$18,300 to $81,800 a year.** The average salary was **$42,700 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Canadian Information Processing Society (CIPS) website: www.cips.ca

Software Human Resource Council (SHRC) website: www.shrc.ca

Related Occupational Profiles

Call Centre Agent
Computer and Network Operator
Computer Programmer
Systems Tester
Web Designer
Web Technician
Webmaster

Related High School Subjects

Communication Technology; Information Processing; Language Arts; Languages (other than English); and Mathematics

Related Post-Secondary Fields of Study

Computer and Information Technology

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Customs Broker

Produced JUNE 2003

Customs brokers are employed by importers and exporters to clear goods through customs and ensure their timely delivery. They may also be involved in logistics or supply chain management.

NOC Number(s): 1236.1
Minimum Education: High school diploma
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **M S d**

Duties

Customs brokers use their knowledge of trade-related laws and regulations to move shipments through Canada Customs as quickly and efficiently as possible. They may also act as freight forwarders, consultants or legal agents for organizations such as importers, wholesalers and manufacturers.

In general, customs brokers:

- prepare and process import/export documents and other forms in accordance with customs regulations, laws and procedures
- arrange to pay duties, taxes, storage and goods transportation charges, and for bonds to cover dutiable goods
- provide advice about duty and tax rates on commodities
- provide advice regarding export and import restrictions, tariff systems, letters of credit, insurance requirements and other import/export-related matters (e.g. shipping requirements for domestic and foreign transportation services)
- provide audit services to help importers comply with Canada Customs and Revenue Agency requirements
- trouble-shoot problems when they arise
- represent clients before administrative tribunals or in other dealings with government officials.

Working Conditions

Customs brokers work in offices located in urban centres or at border crossing locations. They usually work a standard 40-hour week, but may have to be on hand evenings or weekends to meet scheduled shipments. Those employed in frontier or border offices often work shifts to provide 24-hour service for clients.

Personal Characteristics

Customs brokers need the following characteristics:

- the ability to keep up with ever-changing computer systems, trade and customs procedures, laws and regulations
- good oral and written communication skills
- the ability to work well with other people
- the ability to evaluate shipments quickly and handle many details in a short time
- the ability to work well under pressure when problems arise.

They should enjoy having clear rules and organized methods for their work, talking to people and making decisions.

Educational Requirements

The minimum education requirement for customs brokers is a **high school diploma**, but most employers prefer to hire applicants who have some post-secondary education related to economics, business or international trade. New employees' salary levels are determined by how much related education they have.

Newly hired employees in customs brokerage firms may start out as data entry clerks or customs runners who essentially run errands until they have learned enough about the business to advance to customs rater positions. Customs raters prepare documents in the office, and usually take a two year correspondence course from the **Canadian Society of Customs Brokers** to prepare for the exam required to become a qualified Customs Broker. Applicants for the CSCB correspondence course must:

- be over 18 years of age
- be citizens or permanent residents of Canada
- have high school diploma or equivalent education.

Employment and Advancement

(section revised JANUARY 2006)

Customs brokers are employed by customs brokerage firms, freight forwarders and importing firms.

Advancement in this occupation usually takes the form of pay increases and increasingly complex responsibilities.

Customs brokers are part of the larger National Occupational Classification 1236: Customs, Ship and Other Brokers. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Transportation and Warehousing**
- **Oil and Gas Extraction**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 600 Albertans are employed in the Customs, Ship and Other Brokers occupational group which is expected to grow 1.2 to 2.2 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover. (**Note**: Since customs brokers form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for customs brokers.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised SEPTEMBER 2005)

Salaries for customs brokers vary according to the complexity of their responsibilities and the amount of foreign trade they handle.

According to the **2005 Alberta Wage and Salary Survey**, Albertans with three years of experience working part-time or full-time in the Customs, Ship and Other Brokers occupational group earned from **$35,200 to $41,500 a year.** The average salary was **$37,300 a year.**

Other Sources of Information

(section revised JUNE 2005)

Canadian Society of Customs Brokers website: www.cscb.ca

Careers in Transportation website: www.transpocity.ca

Related Occupational Profiles

Insurance Adjuster
Insurance Underwriter
Personal Property/Equipment Appraiser
Purchasing Agent

Related High School Subjects

Financial Management; Language Arts; Languages (other than English); Legal Studies; Logistics; Mathematics; and Social Studies

Related Post-Secondary Fields of Study

Business, Management and Administrative Studies; and Social Sciences, Law and Religious Studies

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For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Customs Inspector

Produced MAY 2003

Customs inspectors administer and enforce Canadian laws and regulations related to customs by controlling the movement of people, vehicles and goods in and out of the country.

NOC Number(s): 1228.3
Minimum Education: High school diploma
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **M D O**

Duties

Customs officers protect Canadian society, the environment and industry by preventing the illegal importation of items (e.g. non-prescription drugs, guns, hate literature) and guarding against the introduction of human, animal and plant diseases into our society.

In the course of enforcing laws relating to customs and excise, customs inspectors inspect goods imported personally and commercially, and deal directly with the travelling public at airports, seaports and highway border points. In general, they:

- examine documents and interview travellers and importers
- examine personal and commercial shipments and monitor the movement of goods
- use established rules to determine taxable value and applicable duty and sales tax rates
- conduct investigations and enforce customs regulations
- ensure the correct duties and taxes are collected on imported goods
- explain the laws they enforce to members of the public
- add information to a computerized information data bank.

Working Conditions

Customs inspectors work at highway and rail border crossings, postal plants, airports, seaports and inland offices. Shift work is required because ports of entry generally operate 24 hours a day, seven days a week. Some offices are located in isolated areas.

There is an element of danger in this line of work, especially in situations where customs inspectors work alone.

Personal Characteristics

Inspectors need the following characteristics:

- good communication skills
- good decision-making skills
- physically fit
- interest in law enforcement
- able to deal effectively with the public
- confidence.

They should enjoy having clear rules and organized methods for their work, analyzing information to determine admissibility of goods, and handling goods and baggage.

Educational Requirements

The minimum education requirement for customs inspectors is **a high school diploma or an acceptable combination of education, training and experience**. Previous experience or education related to law enforcement is preferred, and experience in the following would be an asset:

- obtaining information through investigation
- processing import or export documentation
- using interviewing and examining techniques
- working with the public providing advice or guidance.

For information about Alberta post-secondary programs related to law enforcement, see the Police Officer occupational profile.

Job applicants for Customs Inspector positions must pass a test designed to evaluate job-related abilities. Some positions require that applicants be able to provide services in both official languages; other positions do not. Some language training may be provided after employment.

A valid driver's license is usually required.

Recruits must successfully complete a training program. The training includes Criminal Code enforcement training that requires recruits to be physically fit. Job candidates must also successfully complete a **14-week formal training program** at Rigaud College in Quebec. After successfully completing the program, they return to their home region for further **training on the job.**

Employment and Advancement

(section revised JANUARY 2006)

Customs inspectors are employed by the Canada Customs and Revenue Agency.

Experienced customs inspectors can apply on competitions for positions in customs supervision, management, administration, investigations, intelligence and special programs.

Customs inspectors are part of the larger National Occupational Classification 1228: Immigration, Employment Insurance and Revenue Officers. In Alberta, people employed in this classification work in the **Public Administration** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Public Administration industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 1,950 Albertans are employed in the Immigration, Employment Insurance and Revenue Officers occupational group which is expected to grow 1.7 to 2.7 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 30 to 60 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since customs inspectors form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for customs inspectors.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised SEPTEMBER 2005)

Salaries for customs inspectors range from **$43,900 to $48,600 a year (2003 estimate).**

Other Sources of Information

Canada Customs and Revenue Agency website: www.ccra-adrc.gc.ca/careers

Related Occupational Profiles

Bylaw Enforcement Officer
Foreign Service Officer
Immigration Officer
Security Guard

Related High School Subjects

Language Arts; Languages (other than English); Legal Studies; Logistics; Mathematics; Physical Education; and Social Studies

Related Post-Secondary Fields of Study

Business, Management and Administrative Studies

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Dairy Producer

Produced FEBRUARY 2005

Dairy producers operate dairy farms to produce bulk milk which goes to secondary processing to become table milk, cheese, ice cream, yogurt and other dairy products.

NOC Number(s): 8251
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus below average occupational growth in Alberta
Interests: **D M O**

Duties

Dairy producers may be owner-operators of small dairies who do most of the work themselves, or managers of larger operations who may supervise the work of others. Regardless of size, however, duties on a dairy farm include:

- milking, feeding, cleaning and caring for the dairy herd
- cleaning and sanitizing the milking equipment and milk storage tanks
- managing programs for breeding cows and raising calves
- inspecting and ensuring that sanitary conditions exist especially in the handling, collection and storage of milk
- hiring and supervising staff
- using computer applications to keep production, breeding and financial records
- producing, harvesting and storing feed crops (unless feed for animals is purchased).

Owners of large dairy farms may hire supervisors and herdsmen to help operate their businesses.

The dairy industry operates under a supply-management system which means that all dairy producers must obtain a quota from Alberta Milk before they can ship milk to processing plants. Once they obtain fluid milk or Market Share Quotas, they must be able to produce the specified amounts at all times.

Working Conditions

Working hours are long and variable. Dairy producers must follow a very strict daily schedule, milking and feeding cows two or three times a day, 365 days a year. After each milking, barns and equipment must be cleaned to keep conditions sanitary and safeguard the health of the dairy herd.

Although automation and mechanization has helped to make the work less tedious and physically demanding, heavy labour is still required. Lifting (up to 25 kilograms) is routinely required.

Personal Characteristics

Dairy producers need the following characteristics:

- good health
- strength
- good organizational skills
- patience and self-discipline
- the ability to work independently and with a team.

They should enjoy working with animals, taking a methodical approach to their work and operating machinery and equipment.

Educational Requirements

(section revised APRIL 2005)

Dairy production is a highly specialized business, calling for computer skills and a broad base of knowledge in animal welfare, herd health, breeding and reproduction, feed, mechanics, related technologies, marketing and business

management. Formal training through a college or university program as well as related work experience is an asset, especially for managers.

The **Alberta Green Certificate Farm Training Program** through **Alberta Agriculture, Food and Rural Development** is an apprenticeship-type program that combines practical on-farm experience and training with formal education in the form of home study courses, workshops, short courses or college agricultural courses. The Green Certificate program offers three levels of training:

1. farm technician (swine, dairy, cow calf beef, feed lot, sheep, crop and irrigated crop) requires approximately six to nine months to complete.
2. herdsman or production supervisor requires two or more years to complete.
3. farm business manager requires three or more years of training.

Applicants must be at least 15 years of age and have a supportive farm trainer and job site. Trainees who are also high school students can receive high school diploma credits in an approved optional curriculum for achieving a Green Certificate.

In Alberta, the following post-secondary institutions offer related programs:

- **Lakeland College** in Vermilion offers:
  - a two year Livestock Production diploma program. The entrance requirement is a high school diploma with English Language Arts 30-1 or English 30 (or at least 65 per cent in ELA 30-2 or English 33), Pure or Applied Math 20 (or Math 20 or 23), and one of the following: Biology 20, Chemistry 20, Physics 20 or Science 20.
  - a certificate program in Dairy Production that includes work experience in the college dairy unit
  - a two year Animal Science Technology diploma program.The entrance requirement is a high school diploma with English Language Arts 30-1 or English 30 (or at least 65 per cent in ELA 30-2 or English 33), Pure or Applied Math 20 (or Math 20 or 23), Chemistry 30 and Biology 30.
- **Lethbridge Community College** offers a two year Agricultural Technology diploma program with a specialization in animal science. The entrance requirement is a high school diploma or equivalent (Math 33, Biology 30 and Chemistry 30 are recommended).
- **Olds College** offers a two year Agricultural Business diploma program. The entrance requirement is a high school diploma or equivalent with English Language Arts 30-1 or 30-2 (or English 30 or 33) and at least 55 per cent in Math 20 or 23 and in Biology 20, Chemistry 20 or Science 30. Olds College also offers an Agricultural Production and Management diploma program and a Bachelor of Applied Science degree program.
- The **University of Alberta** Faculty of Agriculture, Forestry and Home Economics in Edmonton offers four year Bachelor of Science (B.Sc.) degree programs in Agriculture, and Agricultural/Food Business Management. The entrance requirement for the Agriculture program is a high school diploma with at least 70 per cent in English 30, Math 30 or Pure Math 30, Biology 30, Chemistry 30 and one other approved 30-level subject. The entrance requirement for the Agricultural/Food Business Management program is completion of the first year of the Agriculture program with a grade point average (GPA) of at least 2.7/4.
- The **University of Lethbridge** offers four year degree programs in Agricultural Studies. The entrance requirement for the Bachelor of Arts degree program in Agricultural Studies is an average of at least 68 per cent in English 30, Math 30 or Pure Math 30 (or Applied Math 30), two other 30-level subjects plus a fifth Grade 12 subject (Biology 30 recommended). Admission to the Bachelor of Science degree program in Agricultural Studies requires Biology 30, Chemistry 30, and Math 30 or Pure Math 30 (Math 31 is recommended). The University of Lethbridge also offers post-diploma degrees in Agricultural Studies for graduates of approved agricultural diploma programs.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Continuing education programs are often offered on an as needed basis.

Employment and Advancement

(section revised JANUARY 2006)

Establishing a dairy operation requires a very large capital investment. Initial costs include land, buildings, quota, equipment and cows. Ongoing operating costs include feed, veterinarian fees, breeding expenses and labour.

For those seeking work on dairy farms as labourers, technicians, supervisors or managers, local Human Resource Development Canada offices are helpful in bringing together farmer-employers and potential employees. With courses, on-the-job training and experience, labourers on dairy farms can advance to positions of greater responsibility.

Individuals who have university degrees and dairy farm experience may move into positions in government, inspection agencies, industry organizations or private industry (e.g. feed companies).

Dairy producers are part of the larger National Occupational Classification 8251: Farmers and Farm Managers. Most people employed in this classification work in the **Agriculture** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Agriculture industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 35,950 Albertans are employed in the Farmers and Farm Managers occupational group which is expected to grow up to 0.5 per cent each year from 2005 to 2010 in Alberta. (**Note**: Since dairy producers form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for dairy producers.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Income from dairy production varies from operation to operation depending on the size of the herd, its production capacity and the size of the operation's debt load (loans and major expenses). Dairy farm income is often supplemented by sales of surplus animals, purebred stock and crop products such as grain and forage.

Dairy production ensures the dairy producer a regular monthly income.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Farmers and Farm Managers occupational group working part-time or full-time earned from **$16,200 to $83,200 a year.** The average salary was **$39,000 a year.**

Other Sources of Information

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Agriculture, Food and Rural Development *Green Certificate* website: www.agric.gov.ab.ca/greencertificate

Alberta Milk (Alberta Milk Producers and Dairy Nutrition Council of Alberta) website: www.albertamilk.com

Related Occupational Profiles

Farm Worker/Technician
Grain and Forage Crop Producer
Livestock/Poultry Producer
Market Gardener

Related High School Subjects

Agriculture; Enterprise and Innovation; Financial Management; Language Arts; Management and Marketing; Mathematics; Physical Education; and Science (Biology; and Chemistry)

Related Post-Secondary Fields of Study

Agriculture and Related Technologies

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Dancer

Produced JULY 2003

Dancers use their bodies to interpret feelings, ideas, moods, music and drama. They may perform alone or with others in a group, before live audiences or in front of television and film cameras.

NOC Number(s): 5134.1
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **M i d**

Duties

Most dance disciplines have a modern and a classical (traditional) side. Professional dance disciplines in Canada include:

- ballet
- modern
- folk or ethnic
- jazz
- tap
- musical theatre
- physical theatre
- ballroom
- country and western.

Most dancers in professional dance companies work in classical or contemporary ballet, modern dance or jazz. However, there are also professional ballroom and country and western dance duos and a limited number of professional tap, folk and ethnic dance companies.

Working Conditions

Dancers spend long hours in rehearsals, training and practice. They may lift over 25 kg (e.g. a fellow dancer). To avoid injury, dancers must:

- maintain superior athletic conditioning
- know their own capabilities and limitations
- be extremely nutrition-conscious.

Personal Characteristics

Dancers need the following characteristics:

- excellent health
- physical strength and excellent conditioning
- self-discipline
- self-confidence
- time and stress management skills
- the ability to think intuitively, creatively and logically
- problem-solving skills
- the ability to learn quickly and remember new and old choreography and music.

They should enjoy using their bodies to express ideas, practising and rehearsing the same movements repeatedly (competing with themselves to do their very best), and entertaining others. Many dancers feel they are "driven" to dance; it is how they best express themselves.

Educational Requirements

(section revised APRIL 2005)

Proper training by accredited instructors and schools is essential. Dancing requires tremendous passion and dedication plus years of continuous training, practice and hard work. In ballet, dancers should be on the professional track by their early teens.

Dancers need to find their own niche, but also be versatile. They must understand their body's capabilities and shortcomings (e.g. some dancers just do not have the bodily form and abilities for ballet), and find the type of dance most suited to their skills and abilities.

To maintain a professional performing career, dancers must:

- practice and train many hours each week, year-round, to keep their bodies toned, in shape and at their peak of athletic ability and quality
- have extensive knowledge and understanding of their own anatomy and physical abilities
- have a broad knowledge of nutrition and health, and live accordingly
- understand or at least have some music training (e.g. classes in music listening skills and theory)
- stay abreast of new training methods, choreography and new work by taking time off yearly for intensive refresher training with qualified teachers.

A working knowledge of lighting and costume design is an asset for communicating well with lighting technicians, costume designers, etc. Many dancers can also sing, play musical instruments and act.

Versatility is key to a dancer's success. After completing their training, dance professionals must continue working with a variety of dance teachers and choreographers. This provides exposure to different interpretations, movements and styles of dance.

There are numerous dance training methods recognized in Canada and advanced training is offered by a variety of private dancing schools. In Alberta, the following public post-secondary institutions offer dance programs:

- The **University of Alberta** in Edmonton offers a four year Bachelor of Physical Education degree program in dance. The entrance requirement is a high school diploma with at least 60 per cent in English 30 plus four other approved 30-level subjects. Only one language other than English will be accepted. A physical fitness test may be required.
- The **University of Calgary** offers a four year Bachelor of Arts degree program in dance. The entrance requirement is an average of at least 72 per cent in English 30 and four of the following: Social Studies 30, Pure Math 30, Applied Math 30, Math 31, Biology 30, Chemistry 30, Physics 30, Science 30, a language other than English, Dance 35, or one five-credit Grade 12 subject. An audition is required.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

The **Alberta Ballet School of Dance** offers summer programs for dancers ranging from beginner to professional levels.

Dance is a highly competitive field. Of all the students who train as dancers, very few become professional. It is important for dancers to have a broad knowledge and appreciation of the arts including music, visual art and architecture as well as the history of dance. A course in anatomy can also be helpful. A degree from a college or university, in addition to extensive dance training, can greatly benefit a dancer's career. Arts degree programs are offered by universities and colleges located throughout Alberta.

Before enrolling in any program, aspiring dancers are strongly advised to discuss their career plans with experienced professional dancers and representatives of professional organizations in the field.

Employment and Advancement

(section revised JANUARY 2006)

Today, dancers require good training and a well-rounded education to find work in the dance field.

As a rule, dancers' careers are relatively short-lived. Most professional dancers retire from performing in their late thirties. With appropriate training, experience and certification, they may become:

- dance critics
- choreographers
- art administrators
- artistic directors
- rehearsal directors

- dance teachers.

Dance teachers can maintain good careers if they remain in good health. Many dance teachers continue to instruct students into their late sixties or even seventies. For more information about related occupations, see the Choreographer and Critic occupational profiles.

In Alberta, most people employed as dancers work in the following industries:

- **Educational Services**
- **Information, Culture and Recreation.**

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 800 Albertans are employed in the Dancers occupational group which is expected to grow 1.4 to 2.4 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 10 to 20 **new** positions will be created each year **in addition** to job openings created by employment turnover.

Salary

(section revised OCTOBER 2005)

Many dancers work in other occupations to supplement their incomes.

Some professional dancers are represented in Canada by the Canadian Actor's Equity Association, although this is not a requirement. The association sets minimum salary levels that are recognized by professional dance companies.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Dancers occupational group working part-time or full-time earned from **$12,700 to $45,300 a year.** The average salary was **$38,800 a year.**

Other Sources of Information

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Dance Alliance website: www.abdancealliance.ab.ca

Canadian Actors' Equity Association website: www.caea.com

Cultural Human Resources Council website: www.culturalhrc.ca

Related Occupational Profiles

Actor
Choreographer

Related High School Subjects

Cosmetology Studies; Fine Arts (Dance; and Music); Foods; Language Arts; Physical Education; and Science (Biology)

Related Post-Secondary Fields of Study

Fine Arts and Performing Arts

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Data Administrator

Produced JULY 2004

Data administrators develop and implement data administration policy, standards and models.

NOC Number(s): 2172.2
Minimum Education: 2 years post-secondary education/training
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: I M D

Duties

Data administrators manage computer systems that provide efficient, effective access to information (data) stored in large databases. For example, in organizations that keep electronic records of customer data (e.g. name, address, phone number, credit card number, buying history), employees may use special software (database management systems) for a variety of purposes (e.g. to send out invoices or catalogues, or log purchases and incentive program points). Data administrators are responsible for the day-to-day operation of database management systems and for long range planning regarding system design and operation.

Specific duties and responsibilities vary depending on the size and type of employer. In very large organizations, data administrators may have specialized responsibilities and work in teams. In other organizations, one data administrator may be responsible for all aspects of data administration. In general, however, data administrators:

- develop and implement data administration policies (which describe the types of information collected, who has access to data, etc.), technical standards (which ensure data security, integrity and validity) and data models (which describe data elements and how they are used)
- consult managers in the organization to determine and document data requirements, data collection and administration policy, and data access rules
- advise others in the organization about the collection of data and its suitability for various uses.

Data administrators may also:

- develop and administer policies and procedures for accessing [illegible]using networks, backing up data and recovering lost data
- supervise the work of database analysts who design and maintain database management systems (for more information, see the Database Analyst profile).

Working Conditions

Data administrators work in modern offices with sophisticated information technology. They usually work standard weekday office hours but may have to work late nights or weekends to implement changes and deal with emergency situations (e.g. system failures). In some positions, travel may be required.

Dealing with system failures and negotiating with managers and other system users can be stressful.

Personal Characteristics

Data administrators need the following characteristics:

- the ability to learn quickly, think logically and understand abstract relationships
- excellent communication and interpersonal skills
- good stress management skills
- an interest in policy development and planning
- an interest in keeping up with ever-changing technology.

They should enjoy working with people from a wide variety of backgrounds, working in a team environment and solving problems.

Educational Requirements

(section revised FEBRUARY 2006)

Data administrators need a combination of related post-secondary education and experience. For example, they may have:

- a degree or diploma in **computer science** or a related discipline that has a significant information technology component, plus management-related education or related experience
- a degree or diploma in **commerce or management** plus computer-related education (e.g. a database vendor certification program) or related experience.

Data administrator is not an entry level position. Employers generally prefer to hire applicants who have several years of related experience.

There are a wide variety of degree, diploma and certificate programs related to computer science offered by universities, colleges, technical institutes and private vocational schools throughout Alberta. For a list, see the Computer Programmer occupational profile.

Some Alberta universities also offer Master of Business Administration (MBA) programs (for more information, see the Management Consultant profile) or software engineering programs (for more information, see the Software Engineer profile).

The following Alberta institutions offer programs specifically related to database administration:

- **New Era Technology**, a private vocational school in Calgary, offers a 40-week Database Administrator program. The admission requirement is a high school diploma with Grade 12 English and a Grade 12 math or equivalent. Applicants must also have completed an Advanced Windows 95/DOS 6.22 course and successfully complete a technical assessment test, a profile test, an aptitude test and an interview.
- **Prestwick College**, a private vocational school in Calgary offers a 47-week Oracle 9i: Database Administrator Professional program. The admission requirement is a high school diploma with Grade 12 English and Math 10 or any Grade 11 math or equivalent.
- The **Southern Alberta Institute of Technology (SAIT)** in Calgary offers a 24-week Database Administrator certificate program and an eight-week optional practicum. The admission requirement is a high school diploma or equivalent with Pure Math 30, Applied Math 30 or Math 33 and English 30 or 33, English Language Arts 30-1 (English 30) or English Language Arts 30-2 (English 33). Applicants must have experience with relational databases such as Microsoft Access and operating systems such as Windows or UNIX/Linus.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Prospective data administrators should talk to potential employers about required and preferred qualifications before enrolling in an education or training program.

Other Requirements

(section revised OCTOBER 2004)

Information Systems Professional is a protected title under Alberta's Professional and Occupational Associations Registration Act. This means that to call yourself an Information Systems Professional, you must be a registered member of the Canadian Information Processing Society of Alberta (CIPS Alberta). You do **not** have to be registered if you do not call yourself an Information Systems Professional.

Employment and Advancement

(section revised JANUARY 2006)

Most data administrators are employed in the head offices of large organizations in:

- the public sector (e.g. government departments, health authorities, education institutions)
- the private sector (e.g. retail chains, oil companies, telecommunications companies).

Some data administrators are employed by information technology consulting firms.

Experienced data administrators who have post-secondary education in business administration or management may advance to senior management positions or establish their own consulting firms.

Data administrators are part of a larger computer systems analysts occupational group. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Professional and Technical Services**
- **Public Administration**
- **Finance, Insurance and Real Estate**
- **Oil and Gas Extraction**
- **Information, Culture and Recreation**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 2,050 Albertans are employed in the Database Analysts and Data Administrators occupational group which is expected to grow 2.1 to 3.1 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 40 to 70 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since data administrators form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for data administrators.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised SEPTEMBER 2005)

Salaries for data administrators vary depending on the responsibilities of the position and the administrator's education and experience.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Database Administrators occupational group working part-time or full-time earned from **$23,600 to $163,500 a year.** The average salary was **$67,800 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Canadian Information Processing Society (CIPS) website: www.cips.ca

Software Human Resource Council (SHRC) website: www.shrc.ca

Related Occupational Profiles

Database Analyst
Information Systems Consultant
Management Consultant
Software Engineer
Systems Auditor
Web Designer
Webmaster

Related High School Subjects

Information Processing; Language Arts; Management and Marketing; and Mathematics

Related Post-Secondary Fields of Study

Business, Management and Administrative Studies; Computer and Information Technology; and Engineering, Architecture and Related Studies

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Database Analyst

Produced JULY 2004

Database analysts are computer specialists who design, develop, modify and maintain database management systems to meet specific user needs.

NOC Number(s): 2172.1
Minimum Education: 2 years post-secondary education/training
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: I M D

Duties

Database analysts develop database management systems to provide efficient, effective access to information stored in large databases. For example, database analysts may develop and maintain inventory and sales systems, patient record systems or systems such as the one used to publish this profile on the Internet.

Specific duties and responsibilities vary, depending on the size and type of employer. However, in general, database analysts:

- define system requirements by consulting data administrators (for more information, see the Data Administrator profile) and talking to system users about the types of information (data) needed, how data should be organized, who should have access to different types of data and how data should be reported (displayed or printed)
- design and develop data models (which describe elements of the data and how they are used) and database architecture by translating abstract relationships into logical structures
- construct, install and test database management systems
- work with users to assess system performance and modify systems as needed
- advise other professionals regarding the selection, purchase and use of database management tools.

Database analysts may also:

- train users and provide technical support while new systems are being tested and implemented
- modify existing databases as user needs and technological capabilities change
- customize commercial databases to meet specific needs.

Working Conditions

Database analysts work in modern offices with sophisticated information technology. They usually work standard weekday office hours but may be required to work overtime to meet project deadlines, deal with emergencies or implement system changes. In some positions, travel may be required.

The work can be stressful when users are demanding or systems do not work as planned.

Personal Characteristics

Database analysts need the following characteristics:

- the ability to learn quickly, think logically and analyze information
- the ability to build abstract structures of complex relationships
- the ability to focus on details without losing sight of the project as a whole
- excellent communication and interpersonal skills
- good stress management skills
- an active interest in keeping up with technological advances.

They should enjoy working with people from a wide variety of backgrounds, working in a team environment and solving problems.

Educational Requirements

Database analysts need **related post-secondary education**. Employers may prefer to hire applicants who have a four year bachelor's degree in computer science or a related discipline that has a significant programming component.

In Alberta, universities, colleges, technical institutes and private vocational schools offer a wide variety of degree, diploma and certificate programs related to computer science. For a list, see the Computer Programmer profile. Graduates must continuously upgrade their knowledge because computer technology is constantly changing.

Prospective database analysts should talk to potential employers about required and preferred qualifications before enrolling in an education or training program.

Other Requirements

(section revised OCTOBER 2004)

Information Systems Professional is a protected title under Alberta's Professional and Occupational Associations Registration Act. This means that to call yourself an Information Systems Professional, you must be a registered member of the Canadian Information Processing Society of Alberta (CIPS Alberta). You do **not** have to be registered if you do not call yourself an Information Systems Professional.

Employment and Advancement

(section revised JANUARY 2006)

Database analysts are employed by:

- information technology consulting firms
- large public sector organizations such as government departments, hospitals and education institutions
- large private sector organizations such as financial institutions, telecommunications companies and insurance companies.

Advancement generally takes the form of greater responsibility for larger, more complex projects. Some experienced database analysts advance to supervisory positions or establish their own consulting firms. Advancement to management positions may require formal education in business administration.

Database analysts are part of a larger computer systems analysts occupational group. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Professional and Technical Services**
- **Public Administration**
- **Finance, Insurance and Real Estate**
- **Oil and Gas Extraction**
- **Information, Culture and Recreation**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 2,050 Albertans are employed in the Database Analysts and Data Administrators occupational group which is expected to grow 2.1 to 3.1 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 40 to 70 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since database analysts form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for database analysts.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised SEPTEMBER 2005)

Salaries for database analysts vary depending on the responsibilities of the position and the analyst's education and experience.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Database Analysts occupational group working part-time or full-time earned from **$21,900 to $88,400 a year.** The average salary was **$58,100 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

Canadian Information Processing Society (CIPS) website: www.cips.ca

Software Human Resource Council (SHRC) website: www.shrc.ca

Related Occupational Profiles

Computer Programmer
Data Administrator
Information Systems Quality Assurance Analyst
Interactive Media Developer
Systems Auditor
Systems Tester
Web Designer

Related High School Subjects

Information Processing; Language Arts; Mathematics; and Science (Physics)

Related Post-Secondary Fields of Study

Computer and Information Technology

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Demographer

Produced DECEMBER 2005

Demographers plan and conduct research to study characteristics of human populations such as size, growth, composition, mobility and distribution.

NOC Number(s): 2161.2
Minimum Education: 6 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: I M D

Duties

Demographers study populations to determine the causes and consequences of changes in population size, mobility, distribution and composition. Much of their work involves:

- collecting and analyzing statistics concerning births, deaths and migration
- describing and analyzing other population characteristics such as age, sex, marital status, race, ancestry, school attendance, education level, employment, occupation, income and household size and composition.

In government and planning organizations, demographic statistics and projections are used to plan for and respond to population changes in an informed and reasonable manner. Changing demographics have far reaching implications in many areas (for example, education, health and social programs). Therefore, identifying, tracking and predicting population trends is vital to planners involved in activities such as drafting immigration policy, planning city services and developing public health, education and labour force training programs.

In business and industry, analysis of demographic data improves a company's understanding of:

- who its customers are
- how its markets are changing in size, location and characteristics
- how products or services may have to change to respond to changing customer/client needs
- where future opportunities might lie.

Familiar with data and its analysis, demographers in business settings often take on a market analysis role. They conduct research, write technical reports and present their findings to management and clients.

Working Conditions

Demographers generally work standard hours in an office environment but may work overtime to meet project deadlines. Some travel may be required to collect data or conduct surveys.

Personal Characteristics

Demographers need the following characteristics:

- an interest in societal trends
- good communication skills
- the ability to be objective, analytical and creative
- the ability to translate social issues and questions into numbers, and draw insights and conclusions from them.

They should enjoy synthesizing data, applying statistical theories and methods, and advising others regarding statistical methodology.

Educational Requirements

Most demographers have a university degree in sociology, economics, political science or statistics, and experience in applying statistical theories and techniques. Traditionally, a master's degree in demography, or in economics or sociology with a demography major, plus a background in statistics or mathematics has been the preferred qualification. However, graduates of marketing and advertising programs have begun to move into the field. The influence of computers in demography also has created job opportunities for computer science majors. Experience with Geographic Information Systems (GIS) programs or fluency in a second language can be a definite asset.

In Alberta, the **University of Alberta** in Edmonton offers a Master of Arts degree program in demography. The entrance requirement is a grade point average of 3.5/4 or equivalent in the last 20 single-term courses of a four year bachelor's degree program in sociology or a related discipline. Applicants should have at least one undergraduate single-term course in each of the following areas: statistics, research methods, theory, macrosociology and social psychology.

For information about relevant bachelor's degree programs, see the Sociologist, Economist, Political Scientist, Statistician, Management Consultant and Market Research Analyst occupational profiles.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

(section revised JANUARY 2006)

Demographers are employed by:

- Statistics Canada and other federal government departments
- provincial and territorial government departments
- research, policy and planning branches of large municipal governments
- school boards, health authorities and social agencies
- universities
- international organizations in areas such as development aid and population planning
- public opinion polling firms
- businesses and consulting firms such as market research firms and actuarial firms.

Those employed in private industry often have other duties that are not strictly demographic in nature. Those employed in universities may teach courses outside the field of population as well as do population-related research. Some demographers operate their own consulting businesses.

Advancement often requires a master's or doctoral degree.

Demographers are part of the larger National Occupational Classification 2161: Mathematicians, Statisticians and Actuaries. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Professional and Technical Services**
- **Public Administration**
- **Finance, Insurance and Real Estate**
- **Educational Services**
- **Food and Beverage Products Manufacturing**
- **Retail Trade**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 450 Albertans are employed in the Mathematicians, Statisticians and Actuaries occupational group which is expected to grow 1.5 to 2.5 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover. (**Note**: Since demographers form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for demographers.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

In 2003, Albertans in the Mathematicians, Statisticians and Actuaries occupational group earned earned an average salary of **$58,800 a year** (2003 Alberta Wage and Salary Survey).

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Canadian Population Society website: www.canpopsoc.org

The Federation of Canadian Demographers website: www.ssc.uwo.ca/assoc/fcd/fcd.html

Related Occupational Profiles

Actuary
Economist
Geographer
Mathematician
Operations Research Analyst
Sociologist
Statistician

Related High School Subjects

Language Arts; Mathematics; and Social Studies

Related Post-Secondary Fields of Study

Business, Management and Administrative Studies; Mathematics; and Social Sciences, Law and Religious Studies

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For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Dental Assistant

Produced OCTOBER 2004

Dental assistants work with health care professionals and related agencies in any or all of the following capacities: chairside assistant, intra-oral assistant, administrative assistant, community health assistant, dental education and research assistant.

NOC Number(s): 3411
Minimum Education: 1 year post-secondary education/training
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: **M S O**

Duties

As chairside assistants, dental assistants:

- receive and prepare patients for treatment
- sterilize, prepare and set out dental instruments and materials
- process x-rays
- assist dentists during dental procedures
- record dental procedures performed
- educate patients.

As intra-oral assistants, dental assistants who have appropriate training and registration may:

- polish clinical crowns and apply fluoride
- apply dental dams, pit and fissure sealants, desensitizing agents, topical anaesthetic, and cavity bases and liners
- take preliminary impressions for diagnostic casts
- apply and remove matrices and wedges
- remove sutures
- place and fabricate temporary crowns and restorations
- expose radiographs (x-rays)
- perform periodontal screening and recording
- place and remove gingival retraction cords
- perform specialized orthodontic procedures.

As receptionists, dental assistants may:

- answer telephone calls
- co-ordinate appointment schedules
- keep records of bank transactions, treatment plan procedures and payroll
- use and maintain dental computer software
- maintain an inventory of supplies.

Working Conditions

Most dental assistants work in dental offices. They are often required to work some evenings and/or weekends to accommodate the needs of the public.

Dental assistants work as part of a dental health care team which may include dentists, dental hygienists, dental lab technicians and denturists.

Personal Characteristics

Dental assistants need the following characteristics:

- initiative
- the ability to put patients at ease
- good communication and interpersonal skills
- steadiness, the ability to remain calm under pressure and skill in coping with emergencies
- good organizational and time management skills
- the ability to co-operate and work as part of a team.

They should enjoy dealing with people, having clear guidelines, and operating and maintaining equipment.

Educational Requirements

In Alberta, dental assistants may:

- take a dental assistant training program and then look for related work
- find employment and take courses while they are working.

The **Northern Alberta Institute of Technology (NAIT)** in Edmonton and the **Southern Alberta Institute of Technology (SAIT)** in Calgary offer Dental Assisting programs that are accredited by the Commission on Dental Accreditation of Canada.

NAIT offers:

- a ten month Dental Assisting program. The entrance requirement is a high school diploma or equivalent with English 30 or 33, Biology 30 and Chemistry 30. To be successful in this program, students must have basic computer literacy.
- Dental Assisting Independent Study certificate programs through Continuing Education. Applicants must be employed in a dental office at least 12 hours per week.
- direct patient care courses and refresher courses through Continuing Education.

SAIT offers:

- a ten month Dental Assisting program. The entrance requirement is a high school diploma or equivalent with an average of at least 60 per cent in English 30 or 33, Math 30, 31 or 33 or Pure Math 30, Biology 30, Chemistry 30 and a high school typing/keyboarding course.
- Dental Assisting courses through Continuing Education. Applicants must be registered as a RDA (registered dental assistant) and have successfully completed the National Dental Assisting Examining Board (NDAEB) examination.
- preparation courses for the NDAEB examination through Continuing Education.

Competition for admission to the ten month dental assisting programs is often keen so higher than minimum marks are generally required to gain admission.

Two private vocational schools in the province also offer dental assistant training programs:

- **Columbia College** in Calgary offers a condensed 28 week Dental Assistant program that includes a four to six week practicum. The entrance requirement is Grade 12 or equivalent.
- **KDM Dental College International Inc.** in Calgary and Edmonton offers an accelerated 25 week Dental Assisting program that includes four weeks of work experience. The entrance requirement is a high school diploma with at least 60 per cent in English and Math 30, and a Grade 11 science or equivalent. KDM Dental College in Calgary also offers a 104 week, part-time Dental Assisting program. Graduates of both programs are eligible to write the NDAEB exam.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Other Requirements

Under Alberta's Dental Disciplines Act and Dental Assistant Regulation, only registered members of the Alberta Dental Assistants Association (ADAA) may call themselves Registered Dental Assistants. Registered members are authorized to perform intra-oral procedures set out in the Regulation. Other dental office staff who are not registered may perform basic chairside dental assisting tasks.

Employment and Advancement

(section revised JANUARY 2006)

Most dental assistants are employed in private practice dental offices. Some are employed by community health agencies, hospital clinics and dental insurance companies.

Advancement opportunities for dental assistants are limited. With additional training, they may transfer into other dental occupations or become dental assistant educators.

In Alberta, most people employed as dental assistants work in the **Health Care and Social Assistance** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Health Care and Social Assistance industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 4,500 Albertans are employed in the Dental Assistants occupational group which is expected to grow 2.6 to 3.6 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 110 to 170 **new** positions will be created each year **in addition** to job openings created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Dental Assistants occupational group working part-time or full-time earned from **$15,800 to $62,200 a year.** The average salary was **$33,100 a year.**

For information about current collective agreements in the public and not-for-profit sectors, see the Health Sciences Association of Alberta (HSAA) website.

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Dental Assistants Association (ADAA) website: www.adaa.ab.ca

Canadian Dental Assistants Association (CDAA) website: www.cdaa.ca

Edmonton Dental Assistants Association (EDAA) website: www.edaa.ab.ca

Health Sciences Association of Alberta (HSAA) website: www.hsaa.ca

National Dental Assisting Examining Board (NDAEB) website: www.ndaeb.ca

Related Occupational Profiles

Dental Hygienist
Dental Technologist
Dentist
Ophthalmic Assistant
Physical Therapy Assistant
Radiological Technologist
Speech-Language Pathologist Assistant

Related High School Subjects

Community Health; Language Arts; Mathematics; and Science (Biology; and Chemistry)

Related Post-Secondary Fields of Study

Health Care and Medical Sciences

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Dental Hygienist

Produced NOVEMBER 2004

Dental hygienists assess and treat oral health conditions, provide preventive care, and educate people about dental hygiene procedures and strategies for promoting wellness.

NOC Number(s): 3222.1
Minimum Education: 3 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **M O S**

Duties

In general, dental hygienists assess, diagnose, plan, implement and evaluate dental hygiene care to help prevent oral disease such as cavities and periodontal (gum) disease. They work as part of health care teams that may include dentists, dental assistants, nurses, dietitians, occupational therapists or speech therapists.

Most dental hygienists work in dental offices or in community health clinics. In dental offices, they may:

- assess oral health conditions
- formulate dental hygiene diagnoses
- develop individualized treatment plans for clients
- use pain management techniques (which may include injecting local anaesthetic)
- counsel clients on oral health care
- expose, develop and interpret x-rays
- use delicate hand instruments and precision power instruments to provide clinical therapies such as scaling, root planing and oral prophylaxis (removing tooth surface deposits and stains) and other non-surgical therapies for periodontal disease
- apply cavity-preventing agents
- implement prevention programs
- refer to other health care professionals as appropriate.

In community (public) health settings, dental hygienists may:

- conduct needs assessments and surveys
- implement preventive and health promotion programs (e.g. regarding fluoridation, tobacco cessation or head and neck injury prevention)
- provide preventive therapies such as scaling and oral prophylaxis
- apply cavity-preventing agents
- counsel parents, students and seniors about oral health care
- complete school oral health inspections and visit classrooms to explain the importance of oral hygiene and proper diet, and provide instruction in the care of teeth and gums
- develop oral health policies for long-term care facilities
- generally promote oral health for all age groups.

Working Conditions

In dental offices and hospitals, dental hygienists work in sanitary, well-lighted surroundings. They generally work regular office hours but often work some evenings and weekends to meet the needs of the public. They may work full-time or have flexible work schedules. Most of the work is performed sitting down. They may be required to lift young children into the dental chair or help transfer adults from wheelchairs into the dental chair.

Dental hygienists working in community health have similar working conditions while caring for clients, but they also visit schools and community groups for inspections and educational presentations. They often have to transport portable equipment that may weigh more than 10 kg.

Dental hygienists must observe safety precautions to avoid injury or disease caused by biological agents (e.g. bacteria, viruses), radiation (e.g. x-rays), chemical agents used in radiology or infection control, or dental instruments and equipment. The most common occupational hazards are back, neck and shoulder problems and carpal tunnel syndrome.

Personal Characteristics

Dental hygienists need the following characteristics:

- a caring, responsible attitude
- good health
- good visual acuity
- the ability to move their hands easily and skillfully
- critical decision-making skills
- an interest in working with people and working as a member of a team.

They should enjoy taking a methodical approach to work that requires precision, working with and teaching people, and recording information.

Educational Requirements

In Alberta, the **University of Alberta** offers a Dental Hygiene diploma program and a four year Bachelor of Science (B.Sc.) Dental Hygiene specialization program. The diploma program requires one pre-professional year plus two years to complete. The degree program requires successful completion of the diploma program plus one year.

Admission to the diploma program requires 30 units of course weight (five full course equivalents) of university work that include:

- six units of organic chemistry
- six units of English
- three units of inorganic chemistry (general chemistry)
- three units of biology (microbiology, zoology, genetics, botany)
- three units of sociology
- three units of psychology
- three units of statistics.

24 of the 30 units must be taken during a Fall/Winter academic year.

The following high school courses are recommended to prepare students for the pre-professional year:

- English Language Arts 30-1
- Pure Math 30
- Chemistry 30
- Biology 30
- a fifth 30-level subject (e.g. Social Studies 30, Physics 30, Math 31, a language other than English).

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Other Requirements

Under Alberta's Dental Disciplines Act and Dental Hygienist Regulation, only registered members of the Alberta Dental Hygienists' Association (ADHA) may call themselves Dental Hygienists. Registered members are authorized to perform procedures set out in the Regulation.

Employment and Advancement

(section revised JANUARY 2006)

Dental hygienists may be employed primarily as clinicians, educators, researchers, administrators, health promoters or consultants. They may work in:

- private dental offices
- institutions (e.g. hospitals, long-term care centres, correctional facilities)
- public health, community health, homecare and other outreach programs

- the armed forces
- government or regulatory bodies
- research or consulting companies
- dental insurance or supply companies
- post-secondary institutions.

Advancement depends on educational background and experience. Teaching, research and administrative positions require academic qualifications beyond the basic diploma program.

Dental hygienists are part of the larger National Occupational Classification 3222: Dental Hygienists and Dental Therapists. In Alberta, most people employed in this classification work in the **Health Care and Social Assistance** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Health Care and Social Assistance industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 1,650 Albertans are employed in the Dental Hygienists and Dental Therapists occupational group which is expected to grow 2.0 to 3.0 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 30 to 50 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since dental hygienists form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for dental hygienists.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Dental Hygienists and Dental Therapists occupational group working part-time or full-time earned from **$16,300 to $97,600 a year.** The average salary was **$63,600 a year.**

Employee benefits such as insurance plans, workers' compensation coverage, educational leaves, sick leaves, etc. are not commonly offered to dental hygienists employed in dental practices.

For information about current collective agreements in the public and not-for-profit sectors, see the Health Sciences Association of Alberta (HSAA) website.

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Dental Hygienists Association, (ADHA) website: www.askadentalhygienist.com

Canadian Dental Hygienists Association (CDHA) website: www.cdha.ca

Health Sciences Association of Alberta (HSAA) website: www.hsaa.ca

Related Occupational Profiles

Dental Assistant
Dental Technologist
Dentist

Related High School Subjects

Communication Technology; Community Health; Language Arts; Mathematics; Physical Education; and Science (Biology; Chemistry; and Physics)

Related Post-Secondary Fields of Study

Health Care and Medical Sciences

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Dental Technologist

Produced DECEMBER 2004

Dental technologists fabricate, duplicate, alter and repair prosthetic and orthodontic dental devices.

NOC Number(s): 3223.1
Minimum Education: 2 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **M O I**

Duties

Dental technologists work according to the prescriptions of dental professionals. They use specialized laboratory equipment such as:

- electric lathes
- microscopes
- drills
- small hand tools and rotary instruments
- high speed motorized equipment
- waxes
- torches and high heat furnaces.

Working Conditions

Dental technologists work in laboratories and dental offices. They usually work eight hour day shifts but some labs have rotating shifts.

Dental technologists are required to lift items weighing up to 25 kilograms and must observe safety precautions when working with potentially hazardous materials.

Personal Characteristics

Dental technologists need the following characteristics:

- a high degree of manual dexterity
- an aptitude for fine mechanical work
- the ability to visualize in three dimensions
- artistic ability combined with an aptitude for engineering
- patience and the ability to concentrate and pay attention to fine detail
- initiative and the ability to work to deadlines
- good communication and interpersonal skills.

They should enjoy analyzing prescriptions and taking a methodical approach to their work, working with tools and equipment at tasks that require precision, and finding solutions to problems.

Educational Requirements

The **Northern Alberta Institute of Technology (NAIT)** in Edmonton offers a two year Dental Laboratory Technology diploma program. The entrance requirement is a high school diploma or equivalent with English 30 or 33, Pure or Applied Math 20, and Biology 30. To be successful in this program, students must have basic computer literacy.

For current information about the program and mature student admission policies, please check the NAIT calendar or website.

Other Requirements

Under Alberta's Health Professions Act and Dental Technologists Profession Regulation, only regulated members of the College of Dental Technologists of Alberta (CDTA) may call themselves Dental Technologists or Dental Technicians. Regulated members provide services listed in the Regulation as prescribed by dentists or denturists.

Employment and Advancement

(section revised JANUARY 2006)

Registered dental technologists may be self-employed or employed in specialized laboratories. For self-employed laboratory owners, success is dependent on personal initiative as well as technical skill.

Dental technologists are part of a larger dental technicians and technologists occupational group. In Alberta, most people employed in this classification work in the following industries:

- **Other Manufacturing**
- **Health Care and Social Assistance**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 550 Albertans are employed in the Technical Occupations in Dental Health Care occupational group which is expected to grow 1.5 to 2.5 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover. (**Note**: Since dental technologists form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for dental technologists.)

Salary

(section revised OCTOBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Dental Technologists, Technicians and Assistants occupational group working part-time or full-time earned from **$15,600 to $113,900 a year.** The average salary was **$38,300 a year.**

For information about current collective agreements in the public and not-for-profit sectors, see the Health Sciences Association of Alberta (HSAA) website.

Other Sources of Information

Post-secondary institution calendar and website (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

College of Dental Technologists of Alberta (CDTA) website: www.cdta.ca

Health Sciences Association of Alberta (HSAA) website: www.hsaa.ca

Related Occupational Profiles

Dental Assistant
Dental Hygienist
Dentist
Denturist
Prosthetist and Orthotist

Related High School Subjects

Fine Arts (Visual Arts); Language Arts; Mathematics; and Science (Biology; Chemistry; and Physics)

Related Post-Secondary Fields of Study

Health Care and Medical Sciences

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Dentist

Produced NOVEMBER 2004

Dentists diagnose, treat, prevent and control orofacial disease.

NOC Number(s): 3113
Minimum Education: 6 years post-secondary education/training
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: I O s

Duties

In general, dentists:

- promote good dental health by advising patients about oral health care
- restore the function and appearance of damaged teeth
- remove teeth when necessary
- replace teeth with fixed or removable devises (bridges, partial and full dentures)
- treat diseases of the mouth and adjacent areas
- move teeth that are out of position
- diagnose and treat diseases of the gums
- perform surgical operations on the mouth or jaw and adjacent tissue
- diagnose and manage disorders of the temporomandibular joint and facial area.

With additional training, dentists may specialize in:

- pediatric dentistry (working with children)
- orthodontics and dentofacial orthopedics (correcting facial and dental irregularities)
- periodontics (treating diseases in the supporting structures of the teeth)
- oral and maxillofacial surgery (removing teeth and diseased tissue)
- oral medicine and pathology (diagnosing and managing diseases and conditions that affect the oral cavity and adjacent structures)
- endodontics (preserving diseased teeth by root canal therapy)
- public health (preventing dental disease and promoting dental health through organized community efforts)
- prosthodontics (restoring natural teeth and replacing missing teeth)
- oral and maxillofacial radiology (taking and interpreting dental and facial x-rays).

Working Conditions

Dentists usually work regular weekday hours but may work some weekend and evening hours. After hours emergency care is sometimes required.

Dentists perform most of their work sitting down, sometimes in uncomfortable positions. Dentistry can be a high stress occupation due, in part, to working with people who are often afraid or in pain.

Dentists use delicate hand tools and power-driven precision tools. They must use safety glasses, masks, gloves, and proper sterilization and disinfection techniques to prevent the transmission of disease to themselves or their patients. Safety precautions also must be observed when taking x-rays and using certain chemicals.

Personal Characteristics

Dentists need the following characteristics:

- good health
- good eyesight
- delicacy of touch
- a marked degree of mechanical aptitude and ability

- finger and manual dexterity
- resourcefulness
- good interpersonal skills
- ability to understand and handle many different types and ages of people.

They should enjoy finding innovative solutions to problems, doing precise work with tools and equipment and helping people.

Educational Requirements

The Faculty of Medicine and Dentistry at the **University of Alberta** in Edmonton offers the only four year program in the province that leads to the required degree, **Doctor of Dental Surgery (DDS).** The entrance requirement is completion of at least two full years of study at an approved university or college with courses in inorganic and organic chemistry, physics, biology and English. Admission requirements also include successful completion of the Dental Aptitutde Test and a structured interview. If the applicant's first language is not English, a minimum score of 580 is required on a TOEFL exam.

Competition for admission to the DDS program is keen. Students should strive for a grade point average (GPA) of at least 3.4/4 in their university courses. Students with less than a 3.0 GPA overall average or science-course average will not be considered.

Post-secondary institutions across Alberta offer university transfer programs that allow students to apply up to two years of study toward university bachelor's degree programs. It is the student's responsibility to ensure that the courses they choose to take will be accepted for credit at the institution to which they wish to transfer.

The entrance requirements for university transfer programs vary but generally include a high school diploma or equivalent with English 30 and four other 30-level courses (Pure Math 30, Biology 30, Chemistry 30 and Physics 30 recommended).

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Other Requirements

Under Alberta's Health Professions Act and Dentists Profession Regulation, registration with the Alberta Dental Association and College (ADAC) is mandatory if you meet identified competency requirements and provide professional services directly to the public, teach the practice of the profession to members or students of the profession, or supervise registered members who provide services to the public. Registered members who are authorized by the College may perform restricted activities specified in the Regulation. Only registered members may call themselves Dentists.

Employment and Advancement

(section revised JANUARY 2006)

Directly upon graduation, dentists may engage in private (solo) practice. However, partnerships with established dental practitioners and group practices are becoming increasingly popular.

Some dentists are employed by municipal, provincial and federal health services or the Canadian Armed Forces. Career possibilities outside of dental practice include working as dental educators, researchers or administrators.

In Alberta, most people employed as dentists work in the **Health Care and Social Assistance** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Health Care and Social Assistance industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 2,150 Albertans are employed in the Dentists occupational group which is expected to grow 3.5 to 4.5 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 70 to 100 **new** positions will be created each year **in addition** to job openings created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

In the larger cities in Alberta, the supply of dentists is almost equal to the demand. Better opportunities exist in some smaller centres where dentists can be reasonably confident of success in building a practice relatively quickly.

Salary

(section revised OCTOBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, part-time or full-time starting salaries for Albertans working in the Dentists occupational group ranged from **$53,800 to $172,300 a year.** The average salary was **$111,500 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Dental Association and College (ADA) website: www.abda.ab.ca

Association of Prosthodontists of Canada (APC) website: www.prosthodontics.ca

Canadian Academy of Endodontics (ACE) website: www.caendo.ca

Canadian Academy of Pediatric Dentistry (CAPD) website: www.capd-acdp.org

Canadian Academy of Periodontology (CAP) website: www.capd-acdp.org

Canadian Academy of Restorative Dentistry and Prosthodontics (CARDP) website: www.cardp.ca

Canadian Association of Oral and Maxillofacial Surgeons (CAOMS) website: www.caoms.com

Canadian Association of Public Health Dentistry (CAPHD) website: www.caphd-acsdp.org

Canadian Dental Association (CDA) website: www.cda-adc.ca

Canadian Association of Orthodontists (CAO) website: www.cao-aco.org

Related Occupational Profiles

Canadian Forces Personnel - Commissioned Officer
Dental Assistant
Dental Hygienist
Dental Technologist
Optometrist
Physician

Related High School Subjects

Community Health; Language Arts; Management and Marketing; Mathematics; Physical Education; and Science (Biology; Chemistry; and Physics)

Related Post-Secondary Fields of Study

Health Care and Medical Sciences

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Denturist

Produced NOVEMBER 2004

Denturists are dental health professionals who specialize in the field of removable oral prosthesis (dentures). In partnership with other health care professionals, they assess, design, fabricate, repair and insert complete and removable partial dentures and diagnose related problems.

NOC Number(s): 3221
Minimum Education: 2 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **M O I**

Duties

Denturists work directly with patients, independently or in collaboration with other health care professionals. In general, they:

- consult with clients, diagnose denture problems and formulate treatment plans
- perform the intra-oral (in mouth) procedures and laboratory procedures required to design dentures
- insert dentures to fit patients comfortably and properly
- repair, reline and adjust dentures as required.

Denturists work with dental instruments and machinery. They also use a variety of materials during the process of constructing dentures including:

- waxes
- gypsum materials
- metals
- plastics
- porcelains
- chemical solutions
- impression materials.

Working Conditions

Denturists work in denture clinics and associated laboratories (which are usually on the same premises). They work standard office hours but may put in longer hours particularly if they are self-employed.

Personal Characteristics

Denturists need the following characteristics:

- the ability to concentrate and make decisions
- manual dexterity for working with equipment and instruments
- patience
- excellent communication skills especially listening skills.

They should enjoy taking a methodical approach to diagnosing problems, analyzing information and experimenting with denture designs, and doing precise work with tools and equipment.

Educational Requirements

The **Northern Alberta Institute of Technology (NAIT)** in Edmonton offers the only training program for denturists in Alberta. The entrance requirement is a high school diploma or equivalent with English 30 or 33, Biology 30 and Pure or Applied Math 20 (or Math 23). To be successful in the program, students must be computer literate. Students gain practical experience by working with patients throughout this two year program.

Graduates of the Denturist Technology program are required to complete a 24 month internship approved by the College of Alberta Denturists and successfully challenge the College's examinations.

Other Requirements

Under Alberta's Health Professions Act and Denturists Profession Regulation, registration with the College of Alberta Denturists is mandatory if you meet identified competency requirements and provide professional services directly to the public, teach the practice of the profession to members or students of the profession, or supervise registered members who provide services to the public. Registered members who are authorized by the College may perform restricted activities specified in the Regulation. Only Regulated Members may call themselves Denturists.

Employment and Advancement

(section revised JANUARY 2006)

After they are registered as Regulated Members of the College of Alberta Denturists and have been issued a Practice Permit, denturists may continue to work for other employers or operate their own denture clinics.

In Alberta, people employed as denturists work in the following industries:

- **Health Care and Social Assistance**
- **Other Manufacturing**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

About 250 Albertans are employed in the Denturists occupational group which is expected to grow 1.5 to 2.5 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Employment growth is best outside major cities.

Salary

(section revised OCTOBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Denturists occupational group working part-time or full-time earned an average salary of **$46,600 a year**.

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

College of Alberta Denturists, Suite 270, 10123 - 99 Street, Edmonton, Alberta, T5J 3H1.

Denturist Association of Canada (DAC) website: www.denturist.org

Related Occupational Profiles

Dental Technologist
Prosthetic/Orthotic Technician

Related High School Subjects

Fine Arts (Visual Arts); Language Arts; Mathematics; and Science (Biology; Chemistry; and Physics)

Related Post-Secondary Fields of Study

Health Care and Medical Sciences

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Diagnostic Medical Sonographer

Produced DECEMBER 2004

Diagnostic medical sonographers operate ultrasound equipment to produce and record images of body organs and masses including the fetus.

NOC Number(s): 3216
Minimum Education: 3 years post-secondary education/training
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: O M i

Duties

Diagnostic medical sonographers work as part of a health care team which may include doctors, nurses and other medical technologists. Ultrasound is used to:

- monitor pregnancies
- assist in diagnosing heart, vascular, abdominal, pelvic and brain disorders
- assist in some medical procedures (e.g. placing drainage catheters, biopsies).

In general, diagnostic medical sonographers are involved in:

- obtaining, reviewing and bringing together pertinent patient history, information from physical examinations and supporting clinical data to facilitate diagnoses
- producing, assessing and evaluating ultrasound images to aid in diagnoses
- reporting technical findings to interpreting physicians (sonologists)
- educating patients and promoting the principles of good health.

Working Conditions

Diagnostic medical sonographers work in hospital and clinical settings. They may work shifts including some evenings and weekends, and may be required to be on call.

Sonographers often work with patients who are anxious. They assist patients on and off examining tables, and may experience unpleasant sights, odours and medically stressful situations. Working in awkward positions can cause repetitive strain injuries.

Personal Characteristics

Medical sonographers need the following characteristics:

- good upper body and shoulder strength
- the stamina required to spend hours on their feet
- good communication and observation skills
- the ability to visualize in three dimensions
- the ability to pay close attention to detail
- the ability to handle unpleasant situations
- teamwork skills.

They should enjoy operating equipment, observing patients to ensure their safety and comfort and compiling information.

Educational Requirements

In Alberta, accredited training programs for diagnostic medical sonographers are offered by the **Northern Alberta Institute of Technology (NAIT)** in Edmonton and the **Southern Alberta Institute of Technology (SAIT)** in Calgary. Both institutions offer a 28 month diploma program. The minimum entrance requirement is a high school diploma or equivalent with an average of at least 60 per cent in English 30, Biology 30, Pure Math 30 or Math 31,

Chemistry 20 and Physics 30 (or equivalent). These are quota programs so a much higher average may be required to gain admission.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Diagnostic sonographers must take continuing education courses to maintain their certification. Certification by the American Registry of Diagnostic Medical Sonographers (ARDMS) is obtained by successfully passing qualifying examinations.

Employment and Advancement

(section revised JANUARY 2006)

Since ultrasound does not expose patients to known hazards (as does ionizing radiation or the injection of dyes), its use in medicine is growing rapidly. Ultrasound is used in:

- internal medicine (abdomen)
- obstetrics and gynaecology
- ophthamology
- cardiology
- neurology
- muscular studies
- pediatrics.

Most sonographers are employed in hospitals and private clinics.

In Alberta, people employed as diagnostic medical sonographers work in the **Health Care and Social Assistance** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Health Care and Social Assistance industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 350 Albertans are employed in the Medical Sonographers occupational group which is expected to grow 2.7 to 3.7 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Employment prospects are best for diagnostic medical sonographers who also have cardiac training or vascular training (for more information, see the Cardiology Technologist profile).

Salary

(section revised OCTOBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Medical Sonographers occupational group working part-time or full-time earned from **$50,700 to $73,800 a year.** The average salary was **$66,100 a year.**

For information about current collective agreements in the public and not-for-profit sectors, see the Health Sciences Association of Alberta (HSAA) website.

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Diagnostic Sonographers Association (ADSA) website: www.ultrasound.ca

American Registry of Diagnostic Medical Sonographers (ARDMS) website: www.ardms.org

Canadian Association of Registered Diagnostic Ultrasound Professionals (CARDUP) website: www.cardup.org

Health Sciences Association of Alberta (HSAA) website: www.hsaa.ca

Related Occupational Profiles

Cardiology Technologist
Combined Laboratory and X-Ray Technologist
Electroneurophysiology (ENP) Technologist
Magnetic Resonance Technologist
Nuclear Medicine Technologist
Radiation Therapist
Radiological Technologist
Respiratory Therapist

Related High School Subjects

Community Health; Language Arts; Mathematics; Physical Education; and Science (Biology; Chemistry; and Physics)

Related Post-Secondary Fields of Study

Health Care and Medical Sciences

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Dietitian

Produced MARCH 2003

Dietitians develop, implement and evaluate food and nutrition strategies to promote health and treat disease; manage food service systems; and develop and deliver related programs and policies.

NOC Number(s): 3132
Minimum Education: 5 years post-secondary education/training
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: **D I S**

Duties

Dietitians may work in health care, community, education, government or industrial settings. Duties and responsibilities vary from one position to another but, in general, dietitians:

- assess individuals' nutritional status
- develop, implement and evaluate nutritional interventions and programs
- manage food service departments or clinical and community nutrition services
- work with individuals, families, consumer groups and industry to help them apply nutrition principles
- develop and deliver food service and nutrition education programs
- conduct basic and applied research in food, nutrition and food service systems.

Dietitians may work primarily in health care, health promotion, food service management, education, business, private practice, research or a combination of settings.

Dietitians in the **health** field may:

- conduct nutritional assessments and provide nutrition counselling
- plan and direct nutritional care in collaboration with doctors, nurses, social workers, food and nutrition managers, rehabilitation therapists, pharmacists and other professionals
- work in the community in collaboration with community health promotion and home care programs
- make recommendations regarding public policy (for example, nutrition labelling, food fortification, nutrition standards for school programs).

Food service management dietitians manage all aspects of food preparation and service operations in hospitals, industrial organizations and businesses. In general, they:

- prepare and administer budgets
- develop food service policies
- monitor food purchasing procedures
- control food quality
- ensure safety standards are maintained
- plan menus
- co-ordinate recipe development and standardization.

Educators

- co-ordinate dietetic education programs in hospitals and the community at large
- educate the public about nutrition for health promotion and disease prevention
- promote workplace health and wellness
- train health care professionals and paraprofessionals.

In business settings, dietitians assist food and pharmaceutical companies, marketing associations and food service providers in developing, promoting and marketing food and nutritional products.

Consultants in private practice provide expertise in nutrition, diet therapy and food service to individuals, institutions, businesses and the media.

Researchers work in the research laboratories of universities and food and pharmaceutical companies. In universities, they may also have teaching responsibilities.

Working Conditions

Working conditions depend on the type of workplace and may vary considerably. Dietitians generally work weekdays, but may be on call weekends or required to deliver programs evenings or weekends.

Personal Characteristics

Dietitians need the following characteristics:

- analytical ability
- an interest in science
- good communication skills

They should enjoy co-ordinating and developing education materials and programs, analyzing information and solving problems, and working with people.

Educational Requirements

The minimum education requirement is a **four year degree in foods and nutrition** that has been approved by the College of Dietitians of Alberta.

In Alberta, the **University of Alberta** in Edmonton offers a four year Bachelor of Science degree program in Nutrition and Food Science with specializations in dietetics, food science and technology, and nutritional science. The entrance requirement is an average of at least 65 per cent in English 30, Biology 30, Chemistry 30, Math 30 or Pure Math 30, and one other approved Grade 12 subject. Physics 30 is recommended for the food sciences and technology major.

Post-secondary institutions throughout the province offer university transfer programs that allow students to apply up to two years of study toward university bachelor's degree programs. It is the student's responsibility to ensure that the courses they choose to take will be accepted for credit at the institution to which they wish to transfer.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Other Requirements

(section revised OCTOBER 2004)

Under Alberta's Health Professions Act and Registered Dietitians and Registered Nutritionists Profession Regulation, registration with the College of Dietitians of Alberta (CDA) is mandatory if you meet identified competency requirements and provide professional services directly to the public, teach the practice of the profession to members or students of the profession, or supervise registered members who provide services to the public. Registered members who are authorized by the College may perform restricted activities specified in the Regulation. Only registered members may use the protected titles Registered Dietitian, Registered Nutritionist or Dietitian.

Employment and Advancement

(section revised JANUARY 2006)

Dietitians work in a wide variety of workplaces, including:

- hospitals and long-term care facilities
- clinics and community health units
- social service agencies
- correctional services
- food processing companies
- pharmaceutical companies
- schools, colleges and universities
- government agencies

- the Armed Forces
- private consulting firms
- non-profit and community organizations.

Some dietitians are self-employed consultants.

Dietitians are classified in the larger National Occupational Classification 3132: Dietitians and Nutritionists. In Alberta, over 75 per cent of people employed in this classification work in the **Health Care and Social Assistance** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Health Care and Social Assistance industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 800 Albertans are employed in the Dietitians and Nutritionists occupational group which is expected to grow 4.5 to 5.5 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 30 to 50 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since dietitians form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for dietitians.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Dietitians and Nutritionists occupational group working part-time or full-time earned from **$15,600 to $66,700 a year.** The average salary was **$60,600 a year.**

For information about current collective agreements in the public and not-for-profit sectors, see the Health Sciences Association of Alberta website.

Other Sources of Information

Post-secondary institution calendar and website (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Registrar, College of Dietitians of Alberta, 540, 10707 100 Avenue, EDMONTON, Alberta, T5J 3M1.
Email: cda@collegeofdietitians.ab.ca

Canadian Healthcare Association website: www.cha.ca

Dietitians of Canada website: www.dietitians.ca

Health Sciences Association of Alberta website: www.hsaa.ca

Related Occupational Profiles

Food and Nutrition Manager
Food Scientist
Food Service Supervisor
Restaurant Manager

Related High School Subjects

Communication Technology; Community Health; Financial Management; Foods; Language Arts; Mathematics; and Science (Biology; Chemistry; and Physics)

Related Post-Secondary Fields of Study

Human Ecology, Fashion and Food Sciences

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Digital Printing Machine Operator

Produced DECEMBER 2005

Digital printing machine operators use laser printers, computerized high speed colour copiers and other printing machines to print text, illustrations and designs on paper.

NOC Number(s): 9471
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus below average occupational growth in Alberta
Interests: **M O I**

Duties

Digital printing machine operators run machines that print images. Their duties and responsibilities vary depending on the type of machine but, in general, operators:

- review work orders to determine print job specifications such as ink colour and number of copies required
- set up and adjust printing machines (for example, fill ink reservoirs and load paper stock)
- use a keyboard or console to input instructions
- monitor print runs, trouble-shoot problems and make adjustments as required
- may perform routine maintenance functions such as cleaning machines and replacing worn parts.

In small shops, they also may:

- answer telephones and customer questions
- provide pricing quotes and write up print orders
- send faxes
- maintain supply inventories and keep records of print orders and shipments.

Working Conditions

Working conditions vary. In large companies that employ many digital printing machine operators, they may work in large plants. Smaller print shops that employ eight to ten people are usually located in an industrial bay or retail location. Shift work may be required and overtime is often required to meet print deadlines.

Digital printing machine operators frequently lift loads of paper weighing up to 25 kilograms and do a considerable amount of standing, bending and stooping. Fumes from solvents may be a concern for people who have allergies.

Personal Characteristics

Digital printing machine operators need the following characteristics:

- good literacy and numerical skills
- good colour vision
- good hand/eye co-ordination
- the ability to pay careful attention to details
- the ability to work under the pressure of deadlines
- the ability to stand for long periods
- tact and discretion when dealing with customers' material.

Those who work directly with customers also need good customer service skills.

All printing machine operators should enjoy taking a methodical approach to programming printers, operating and trouble-shooting machines, and working with little supervision.

Educational Requirements

Digital printing machine operators may learn on the job. They must be willing to update their skills frequently to keep up with changing technology. Employers may prefer to hire high school graduates who have related training or experience with computer-operated equipment.

In Alberta, the following institutions offer related post-secondary programs:

- **NorQuest College** in Edmonton offers a 20 week Press and Bindery Operator program. The entrance requirement is Grade 10 English and math. Graduates of this program may transfer credit toward the SAIT diploma program.
- The **Southern Alberta Institute of Technology (SAIT)** in Calgary offers a two year Digital Graphics Communications diploma program. The entrance requirement is a high school diploma with English Language Arts 30-1 or 30-2 (or English 30 or 33).

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

(section revised JANUARY 2006)

Digital printing machine operators are employed in:

- rapid printing services
- commercial printers
- large organizations that have in-house printing facilities.

Experienced operators may become estimators who quote prices for customers or production managers or move into marketing and sales.

Digital printing machine operators are part of the larger National Occupational Classification 9471: Printing Machine Operators. In Alberta, over 75 per cent of people employed in this classification work in the **Other Manufacturing** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Other Manufacturing industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

About 600 Albertans are employed in the Printing Machine Operators occupational group which is expected to grow 0.5 to 1.5 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover. (**Note**: Since digital printing machine operators form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for digital printing machine operators.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Printing Machine Operators occupational group working part-time or full-time earned from **$17,900 to $51,800 a year.** Salaries for digital printing machine operators are usually at the lower end of this range.

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Northern Alberta Printers Association (NAPA) website: www.albertaprinters.com

Printing and Graphics Industries Association of Alberta (PGIA) website: www.pgia.ca

Related Occupational Profiles

Binding and Finishing Machine Operators
Pre-Press Technician
Printing Press Operator

Related High School Subjects

Communication Technology; Language Arts; Mathematics; and Physical Education

Related Post-Secondary Fields of Study

Trades, Industrial and Related Training

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Direct Distributor

Produced OCTOBER 2003

Direct distributors demonstrate and sell products such as books, candles, clothing, cookware, cosmetics, craft supplies, gourmet food, home care items, toys and vitamins.

NOC Number(s): 6623.1
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus below average occupational growth in Alberta
Interests: **M S d**

Duties

Direct distributors usually travel to potential customers' homes to demonstrate and sell products. They may also show, describe and sell goods or services at exhibitions and trade shows, or at special demonstration stands in shopping malls and stores.

Duties and responsibilities vary from one organization to another but, in general, direct distributors:

- set up displays or demonstrations
- show samples or product catalogues, and explain the functions and desirable qualities of products
- write orders and accept payment, or pass orders to others to process
- buy products from companies at wholesale prices
- deliver goods to customers or monitor orders sent directly from the company head office
- distribute advertising literature and/or leave samples
- demonstrate how orders can be placed on-line
- attend meetings about new products, sales techniques and special promotions.

To identify potential customers, direct distributors may contact people by telephone, use a person-to-person approach or sponsor events for groups of friends. They generally do not sell products door-to-door.

Direct distributors who use a **person-to-person** approach:

- identify and approach new customers through their network of personal contacts and encourage customers to recommend them to others
- show product samples (e.g. books, household cleaning products, cosmetics, costume jewellery, encyclopedias, foods and vitamins) to friends, relatives and people they meet through other activities
- may be required to operate within an exclusive territory but are usually allowed to find customers anywhere.

Direct distributors who use a **sales party or educational** approach:

- establish a party or teaching atmosphere at small gatherings in people's homes and display or demonstrate products (e.g. clothing, cookware, cosmetics, toys, crafts and hobby items)
- thank hosts for organizing parties, classes or shows by giving them merchandise or providing other benefits
- encourage participants to host similar events for their friends.

Direct distributors are generally expected to recruit new distributors and help them start their own businesses.

Working Conditions

Direct distributors may work part-time or full-time. Most work part-time from their own homes. Travel to customers' homes and conventions may be required.

Personal Characteristics

Direct distributors need the following characteristics:

- self-motivated
- enthusiastic

- persuasive
- willing to learn about the goods they sell
- enjoy working with people
- able to manage their time well.

They should enjoy presenting products and catalogues, encouraging people to purchase items and taking responsibility for projects.

Educational Requirements

There are **no minimum education** or experience requirements for direct distributors. However, experience in customer service or sales and fluency in more than one language are definite assets.

Some companies offer training programs, sales support, contests and promotions designed to help their direct distributors increase sales. Training programs and materials are usually supplied free of charge or for a small fee.

Before agreeing to work for any company, people considering this occupation should learn as much as possible about the company, particularly if some form of financial investment is required. Factors to consider include company reputation, number of years in business, business record and product or sales integrity.

Other Requirements

Self-employed salespersons such as direct distributors may be required to obtain a municipal business license.

Employment and Advancement

(section revised JANUARY 2006)

Most direct distributors operate home-based businesses associated with large manufacturers.

Advancement opportunities for direct distributors may take the form of additional or better sales areas, or recruiting other direct distributors who work under the direction and supervision of the person who recruited them.

Direct distributors are part of the larger National Occupational Classification 6623: Other Elemental Sales Occupations. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Retail Trade**
- **Management, Administrative and Other Support Services**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 6,250 Albertans are employed in the Other Elemental Sales Occupations group which is expected to grow 0.7 to 1.7 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 40 to 110 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since direct distributors form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for direct distributors.)

The employment turnover rate is relatively high for direct distributors so there are usually positions available.

Salary

(section revised OCTOBER 2005)

Direct distributors' earnings are based on **commission,** and therefore vary from month to month, and year to year. Commissions may increase with sales volume.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Direct Distributors occupational group working part-time or full-time earned an average salary of **$58,600 a year**.

Related Occupational Profiles

Retail Salesperson
Telemarketer

Related High School Subjects

Enterprise and Innovation; Financial Management; Language Arts; Languages (other than English); Logistics; Management and Marketing; and Social Studies

Related Post-Secondary Fields of Study

Business, Management and Administrative Studies

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Dispatcher

Produced JUNE 2003

Dispatchers receive requests for service or emergency assistance and relay information to field personnel.

NOC Number(s): 1475.1
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **M D S**

Duties

Dispatchers' duties and responsibilities vary from one position to another but, in general, they:

- answer telephone requests for service or receive requests from telephone operators
- process and transmit information to field personnel via radio or computer-aided dispatch systems
- prepare daily work schedules and runs
- dispatch personnel according to written schedules, work orders or protocols
- advise personnel about traffic problems, including construction areas, accidents, congestion, weather conditions and other hazards
- monitor workloads and/or locations of personnel
- maintain work records and prepare reports (e.g. accident reports, complaint forms)
- keep records and logs to document calls
- record mileage
- co-ordinate services.

Taxi dispatchers send taxi cabs in response to calls for service. They take requests for cabs, inform drivers by radio or telephone and log the calls and addresses given to each driver.

Tow truck dispatchers take calls from vehicle owners for emergency service. They record information such as the name of the caller, type of problem, vehicle location and description, and relay the information to tow truck drivers.

Utility company dispatchers receive requests for services related to gas, water, telephone or electricity. They take emergency reports from the public, obtain relevant information and dispatch a work crew (or other appropriate agencies if necessary).

Emergency services dispatchers who work in the communications departments of ambulance, fire or police services:

- take calls via telephone or alarm systems
- make decisions regarding the relative priorities of emergencies
- contact field personnel
- keep in touch with personnel being dispatched to send further information
- answer questions and ensure safety of the unit
- co-ordinate services from other agencies
- relay information to hospital emergency rooms.

Emergency service call takers are telephone operators who receive emergency calls for assistance. The information they receive is relayed to dispatchers of appropriate emergency services.

Working Conditions

Dispatchers usually work shifts, sometimes 12 hour shifts, including nights, holidays and weekends. They may have to work longer than their shift to complete calls or to wait for relief workers.

This work requires sitting for long periods of time. It can be stressful when dealing with emergency situations or with routine work punctuated by very busy periods.

Other working conditions vary depending on the type of employer. Dispatchers may work in small offices with simple telephone systems and poor lighting, or large offices with computerized systems and ergonomically-designed work stations.

Personal Characteristics

Dispatchers need the following characteristics:

- excellent communication skills
- good eyesight, hearing, manual co-ordination and dexterity
- the ability to listen to incoming requests for service and dispatch services at the same time (multi-tasking skills)
- a good memory for details and procedures
- good judgement and decision-making skills
- the ability to work well in a team environment
- the flexibility required to deal with the unexpected
- the ability to remain calm during busy periods and emergency situations.

They should enjoy taking a methodical approach to compiling information, operating communications equipment and talking to people.

Educational Requirements

Taxi, tow truck and utility dispatchers are **trained on the job**. Employers generally look for job applicants who have related work experience, at least some high school education and a good knowledge of the geographical area in which they work. Some employers consider dispatcher a supervisory position and require applicants to have previous dispatch or driving experience. A high school diploma and computer skills are definite assets.

Police and emergency dispatchers are required to have a high school diploma plus related formal or on-the-job training (e.g. experience working with multi-line telephone systems or working with people in distress). They may be experienced police officers or emergency medical services personnel.

In Alberta, the following post-secondary institutions offer Emergency Communications and Response programs:

- **Grant MacEwan College** offers an eight month certificate program. The entrance requirement is a high school diploma or equivalent. Skills appraisal (unless you have at least 65 per cent in English 30 or 75 per cent in English 33), keyboarding speed of at least 20 words per minute with 90 per cent accuracy, completion of a career profile, a hearing test and a criminal record check are also required.
- **Medicine Hat College** offers a nine month certificate program. The entrance requirement is a high school diploma or equivalent, and successful completion of a keyboarding assessment, career essay, program interview, hearing exam and criminal record check.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

(section revised JANUARY 2006)

Dispatchers may be employed by:

- police, fire and health departments
- emergency service agencies
- taxi companies
- delivery and courier services
- utility companies
- trucking companies.

Most dispatchers work in private industry.

Experienced dispatchers employed in larger organizations may advance to supervisory positions but, in general, advancement opportunities are limited.

Dispatchers are part of the larger National Occupational Classification 1475: Dispatchers and Radio Operators. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Transportation and Warehousing**

- **Public Administration**
- **Management, Administrative and Other Support Services**
- **Construction**
- **Oil and Gas Extraction**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 4,650 Albertans are employed in the Dispatchers and Radio Operators occupational group which is expected to grow 1.6 to 2.6 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 70 to 130 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since dispatchers form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for dispatchers.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised SEPTEMBER 2005)

Salaries for dispatchers vary considerably depending on the type of work and the employer.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Dispatchers occupational group working part-time or full-time earned from **$13,000 to $167,900 a year.** The average salary was **$44,800 a year.**

Other Sources of Information

(section revised JUNE 2005)

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Careers in Transportation website: www.transpocity.ca

Related Occupational Profiles

Call Centre Agent
Taxi Driver
Traffic Co-ordinator
Utility Clerk

Related High School Subjects

Community Health; Language Arts; Languages (other than English); Logistics; and Management and Marketing

Related Post-Secondary Fields of Study

Clerical and Administrative Support; and Health Care and Medical Sciences

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For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Domestic Housekeeper

Produced JULY 2003

Domestic housekeepers provide household management and personal services for family members in private homes.

NOC Number(s): 6471.2
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: M O s

Duties

Housekeepers employed by individual families may perform any combination of the following duties:

- plan, prepare and cook meals
- purchase groceries and household supplies
- serve meals and refreshments and wash dishes
- clean furnishings, floors, windows, kitchen appliances and bathrooms
- change linens and make beds
- care for children
- do laundry, ironing and minor mending repairs
- take out the garbage
- take care of pets
- run errands for the employer (e.g. drop off and pick up dry cleaning, pay bills, schedule minor home maintenance repairs).

They may specialize in a particular type of task, but it is not uncommon for domestic housekeepers to have a wide range of responsibilities.

Housekeepers employed by residential cleaning service companies may work individually or in teams. They travel from one private residence to another and often cleaning more than one residence a day. They generally perform only cleaning-related tasks.

Working Conditions

Some home management duties are physically demanding, involving standing for long periods of time or lifting items weighing up to 25 kilograms.

Domestic housekeepers may live in the household or come in at regularly scheduled times. The working environment is usually pleasant and live-in workers generally have their own furnished rooms or suites. Hours of work may be irregular.

Housekeepers employed by residential cleaning companies usually start work about 8 a.m. and work until the day's assignments are finished.

Personal Characteristics

All types of housekeepers need the following characteristics:

- good health and stamina
- the ability to follow written and verbal instructions
- good organizational skills
- the ability to work with little supervision
- the flexibility required to work varying hours.

Domestic housekeepers who work for individual families also need excellent interpersonal skills and the ability to maintain employer confidentiality.

Housekeepers should enjoy having clear rules and organized methods for their work and using cleaning materials and equipment.

Educational Requirements

For most domestic housekeeper positions in individual homes, formal education is not as important as related experience and the ability to cook, clean and get along well with others. However, the ability to speak, read and write in the language of the household and to take and direct telephone messages is essential. Character references are usually requested.

Housekeepers who work for cleaning services are trained on the job. Those who work through a placement agency must have verifiable references and a driver's abstract, and submit criminal record and child welfare checks.

Employment and Advancement

(section revised JANUARY 2006)

Domestic housekeepers may be self-employed, or employed part-time or full-time by a homeowner or a housekeeping service.

Housekeepers may move into related service occupations such as personal care attendant, nanny or institutional housekeeper.

Domestic housekeepers are part of the larger National Occupational Classification 6471: Visiting Homemakers, Housekeepers and Related Occupations. In Alberta, over 75 per cent of people employed in this classification work in the **Health Care and Social Assistance** following industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Health Care and Social Assistance industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 4,200 Albertans are employed in the Visiting Homemakers, Housekeepers and Related Occupations group which is expected to grow 1.6 to 2.6 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 60 to 110 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since domestic housekeepers form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for domestic housekeepers.)

There is a relatively high employment turnover rate in this occupation so positions are often available.

Salary

(section revised OCTOBER 2005)

Hourly wages for domestic housekeepers employed by individual families are generally low. Experienced housekeepers may earn **up to $12 per hour.**

Housekeepers employed by residential cleaning companies may be paid hourly wages or by the job (piece work). Some cleaning service companies provide vehicles for employee use but do not necessarily pay for gas.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Visiting Homemakers, Housekeepers and Related Occupations group working part-time or full-time earned from **$9,900 to $30,800 a year.** The average salary was **$18,500 a year.**

Related Occupational Profiles

Nanny
Personal Care Attendant
Room/Housekeeping Attendant

Related High School Subjects

Community Health; Foods; Languages (other than English); and Physical Education

Related Post-Secondary Fields of Study

Personal and Food Services

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Drafting Technician

Produced AUGUST 2005

Drafting technicians prepare engineering and architectural drawings, plans, diagrams and layouts. They may work independently as part of multidisciplinary teams or support the work of technologists, engineers, architects and other professionals.

NOC Number(s): 2253.2
Minimum Education: 1 year post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **M I O**

Duties

Drafting technicians use computer-aided design (CAD) applications, scientific calculators and traditional manual drafting techniques to prepare:

- engineering plans
- architectural plans
- flow diagrams and schematics
- layouts
- specifications
- maps
- detailed working drawings.

They also may be involved in related activities such as:

- estimating project materials and costs
- administering construction contracts
- preparing and interpreting specifications.

Drafting technicians may specialize in a wide variety of fields including:

- aerospace engineering - drawing aerospace vehicles and systems
- architecture - drawing commercial and residential buildings
- civil engineering - preparing drawings and maps for highways, pipelines, sewage systems and other construction projects
- electrical engineering - preparing circuit board, wiring and layout diagrams
- mechanical engineering - drawing machinery and mechanical devices
- urban, regional or park planning - drawing plans for urban or rural communities or parks.

Working Conditions

Drafting technicians usually work standard weekday hours in an office environment. They spend a considerable amount of time working with computers.

Personal Characteristics

Drafting technicians need the following characteristics:

- the ability to pay close attention to detail and be precise and accurate
- good eye-hand co-ordination and manual dexterity
- the ability to visualize three-dimensional objects from two-dimensional drawings and visualize the relationships between parts in machinery and systems
- the ability to communicate design ideas and solutions clearly and concisely orally and in writing
- aptitude for mathematics and physics
- good problem solving abilities.

They should enjoy taking a methodical approach to their work, analyzing data and finding innovative solutions to problems, and working with equipment and instruments at tasks that require precision.

Educational Requirements

(section revised SEPTEMBER 2005)

The minimum educational requirement is a year of related post-secondary education or an equivalent combination of education and experience.

In Alberta, the following post-secondary institutions offer one year drafting programs:

- **Bow Valley College**, in Calgary offers a one year Computer Aided Drafting and Design Technology certificate program. The admission requirement is a high school diploma or equivalent with at least 60 per cent in English 30-2 or 30-1 and a Grade 12 Math.
- **Digital School**, a private vocational school in Edmonton, offers 47 week Architectural, Civil, Engineering, Mechanical, Process, Structural and Survey/Geomatics CAD Technician programs. The admission requirement is a high school diploma or equivalent, and successful completion of an admissions interview.
- **Medicine Hat College** offers a one year Computer Aided Drafting and Design Technology certificate program. The admission requirement is a high school diploma or equivalent with Grade 12 English, Pure or Applied Math (or Math 30 or 33), Physics 20 and a Grade 12 science.

Individual courses in computer-aided drafting are offered by many public and private post-secondary institutions in the province. For information about institutions that offer related two year diploma programs, see the Architectural Technologist, Avionics Technologist, Civil Engineering Technologist, Electrical Engineering Technologist, Electronics Engineering Technologist, Engineering Design and Drafting Technologist, Geomatics/Surveying Technologist, Industrial Designer, Mapping Technologist, Mechanical Engineering Technologist, and Urban, Regional and Park Planners occupational profiles.

Continuing education programs are often offered on an as needed basis.

For current information about programs and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

(section revised JANUARY 2006)

Drafting technicians are employed by:

- engineering consulting firms
- land survey companies
- private machine design firms
- architectural firms
- municipal, provincial and federal government departments
- building fabricators and other manufacturing and assembly companies
- companies in the petrochemical, food processing, pulp and paper and energy industries
- electronic manufacturing companies.

Drafting technicians do the same types of work as architectural technologists and engineering design and drafting technologists but they work under supervision and require several years of experience before they may assume the same level of responsibility as technologists.

Drafting technicians are part of the larger National Occupational Classification 2253: Drafting Technologists and Technicians. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Professional and Technical Services**
- **Metals, Metal Fabrication and Machinery Manufacturing**
- **Construction**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 4,150 Albertans are employed in the Drafting Technologists and Technicians occupational group which is expected to grow 1.8 to 2.8 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 70 to 120 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since drafting technicians form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for technicians.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Drafting Technologists and Technicians occupational group working part-time or full-time earned from **$16,600 to $150,100 a year.** The average salary was **$54,600 a year.** (Note: These figures include technologists' salaries which are generally higher than technicians' salaries.)

For more detailed information, see ASET's Annual Salary Surveys.

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Society of Engineering Technologists (ASET) website: www.aset.ab.ca

Construction Sector Council website: www.csc-ca.org

Related Occupational Profiles

Architectural Technologist
Civil Engineering Technologist
Engineering Design and Drafting Technologist
Steel Detailer

Related High School Subjects

Construction Technologies; Design Studies; Electro-Technologies; Fabrication Studies; Information Processing; Language Arts; Mathematics; Mechanics; and Science (Physics)

Related Post-Secondary Fields of Study

Engineering and Science Technologies

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Drilling and Service Rig Managers

Produced AUGUST 2005

Oil and gas well drilling and service rig managers supervise large crews of specialized workers on drilling and service rigs.

NOC Number(s): 8222
Minimum Education: High school diploma
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: **D i o**

Duties

Drilling and service rig managers supervise rig activity and are responsible for safety on site. They are senior on-site company representatives for rig contractors.

In general, rig managers:

- co-ordinate the work of rig crews (a drilling rig has two or three crews)
- ensure that the entire drilling or well servicing operation runs smoothly, safely and efficiently
- ensure that operations comply with company policies and government regulations
- on drilling rigs, make arrangements to prepare area for drilling
- organize the setting up and dismantling of rigs
- ensure that emergency evacuation and medical procedures are posted and understood.

Working Conditions

Drilling and service rigs operate year round so rig managers work in all types of weather conditions. In Alberta, oil and gas wells may be located in remote areas, around small communities or near major centres.

Hours of work, location of the job and travel requirements vary with the company and the type of job contracted. Most service rig crews travel on a daily basis, usually in a 150 kilometre radius of the service rig contractor's central location. Drilling rig crews are expected to move with the rig to new locations. This often involves being away from home for extended periods of time.

Rig managers often work long hours. They also may be required to lift equipment weighing up to 25 kilograms.

Personal Characteristics

Rig managers need the following characteristics:

- the ability to work quickly and think ahead to the next procedure
- mechanical aptitude
- organizational skills
- communication skills
- physical health
- the ability to plan and direct the work of others.

They should enjoy co-ordinating the work of others, solving problems and working with tools, instruments and machinery.

Educational Requirements

Rig managers need the following training or certification:

- First Aid
- Fall Arrest
- Hydrogen Sulphide (H2S)

- Transportation of Dangerous Goods (TDG)
- Waste Hazardous Material Information System (WHMIS)
- Second Line Blowout Prevention (drilling rig managers) or Well Service Blowout Prevention (service rig managers)
- boiler operation (for more information, see the Power Engineer occupational profile).

They also should be knowledgeable about environmental issues related to oil and gas well drilling.

Employment and Advancement

(section revised JANUARY 2006)

Drilling rig managers start out as leasehands or floorhands and work as motorhands, derrickhands and drillers before becoming rig managers. Service rig managers start as floorhands and work as derrickhands and operators before becoming rig managers. For more information, see the Leasehand/Floorhand, Oil and Gas Service Rig Personnel and Rig Technicians (Levels 1, 2 and 3) occupational profiles.

Rig managers are part of the National Occupational Classification (NOC) 8222: Oil and Gas Drilling and Service Supervisors. In Alberta, most people employed in this classification work in the **Oil and Gas Extraction** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Oil and Gas Extraction industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 13,000 Albertans are employed in the Oil and Gas Drilling and Service Supervisors occupational group which is expected to grow 2.2 to 3.2 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 280 to 420 **new** positions will be created each year **in addition** to job openings created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Drilling rig managers may be paid a day rate (about $600 a day) or an hourly rate. Depending on location and hours of operation, service rig managers may be paid a day rate (about $550 a day) or an hourly rate **(2005 estimates).**

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Oil and Gas Drilling and Service Supervisors occupational group working part-time or full-time earned from **$35,900 to $265,500 a year.** The average salary was **$87,600 a year.**

Other Sources of Information

Canadian Association of Geophysical Contractors (CAGC) website: www.cagc.ca

Canadian Association of Oilwell Drilling Contractors (CAODC) website: www.caodc.ca

Enform (formerly Petroleum Industry Training Service and Canadian Petroleum Safety Council) website: www.enform.ca

Small Explorers and Producers Association of Canada (SEPAC) website: www.sepac.ca

Related Occupational Profiles

Drilling Rig Leasehand/Floorhand
Electronics Engineering Technologist
Oil and Gas Well Loggers and Testers
Rig Technician
Seismic Observer
Service Rig Personnel
Well Service Equipment Operator
Wireline Field Supervisor

Related High School Subjects

Community Health; Energy and Mines; Enterprise and Innovation; Logistics; Mechanics; Physical Education; and Wildlife

Related Post-Secondary Fields of Study

Trades, Industrial and Related Training

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Drilling Rig Leasehand/Floorhand

Produced JULY 2005

Leasehands and floorhands perform general labourer duties on rigs that drill oil and gas wells and case wells with pipe.

NOC Number(s): 8412.1
Minimum Education: Less than high school
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: **O M d**

Duties

Leasehands are the most junior members of a drilling crew. They may:

- load and unload trucks
- perform housekeeping activities such as cleaning ice from walkways, cleaning tools and putting things away
- watch for and remove hazards such as objects in travel routes
- assist other crew members.

Floorhands spend a lot of time working on the rig floor. There often are two floorhands on a crew but smaller rigs may have only one. In general, floorhands:

- use wrench-like power tongs to smoothly and quickly connect and disconnect the lower parts of the drill pipe when it is being lowered into and raised from the hole
- catch samples of drilled cuttings to be analyzed
- assist in laying casing into a well after it has been drilled
- clean and maintain equipment
- perform housekeeping tasks (keep the drilling floor clean, paint or scrub around the rig)
- assist other members of the drilling crew wherever needed.

Working Conditions

Working conditions vary depending on rig locations and weather conditions. Leasehands and floorhands work outdoors, often year round in remote locations, exposed to extremes in weather as well as to the dirt, dust, noise and fumes common around rigs.

The work is physically demanding and may involve lifting items that weigh over 25 kilograms. Because the work is potentially hazardous, all drilling crew members must think and act quickly, always follow standard safety practices, and participate in safety meetings and emergency procedure drills. Hazards include:

- working on wet, slippery rig floors
- working near or with heavy tools and moving machinery
- exposure to chemical substances such as paint, motor oil and drilling mixture additives.

Drilling rig workers are expected to move with the rig to new locations, wherever they may be. They may travel throughout the province and often are responsible for their own transportation to the work site. They work 12 hour shifts typically over a two week period and may live in camps or nearby towns. Usually, they get a week off between two week shift rotations.

Personal Characteristics

Leasehands and floorhands need the following characteristics:

- physical strength and stamina
- emotional stamina
- an interest in working outdoors and in remote areas
- the ability to get along well with co-workers

- a safety-conscious attitude.

They should enjoy having clear rules and guidelines for their work, working with equipment and machinery, and working in a team environment.

Educational Requirements

Leasehands and floorhands acquire the skills and knowledge they need by learning on the job and taking courses.

Employers require applicants to be at least 18 years of age, have a valid driver's license and have some high school education. High school graduation is not required for employment as a leasehand or floorhand but may be an asset for further advancement.

Enform (formerly Petroleum Industry Training Service and Canadian Petroleum Safety Council) in Calgary and Nisku (near Edmonton) offers courses for drilling rig crews members and pre-employment courses for people who want a better understanding of the work environment before working in the industry.

All new crew members must have first aid and H2S Alive certification (hydrogen sulphide training). Employers also may require crew members to take Fall Arrest or Waste Hazardous Material Information System (WHMIS) training.

Employment and Advancement

(section revised JANUARY 2006)

Leasehands and floorhands are employed by oil and gas well drilling contractors. Some rigs operate year round but employment is often seasonal for leasehands and floorhands. Winter is the busiest season for drilling activity.

The most important requirements for advancement on drilling rigs are on-the-job training, a positive team attitude and the ability to learn new things quickly. New employees usually start as leasehands or floorhands and later advance to motorhand, derrickhand and driller positions. For more information, see the Rig Technicians (Levels 1, 2 and 3) occupational profile. A conscientious, hard working individual who has good leadership skills can move from a leasehand position to that of rig manager in eight to ten years.

Leasehands and floorhands are part of the larger National Occupational Classification 8412: Oil and Gas Well Drilling Workers and Services Operators. In Alberta, most people employed in this classification work in the **Oil and Gas Extraction** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Oil and Gas Extraction industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 10,350 Albertans are employed in the Oil and Gas Well Drilling Workers and Services Operators occupational group which is expected to grow 2.5 to 3.5 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 250 to 370 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since leasehands and floorhands form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for leasehands and floorhands.)

Salary

(section revised OCTOBER 2005)

According to salary standards recommended by the Canadian Association of Oilwell Drilling Contractors (CAODC) in October 2005, leasehands and floorhands should be paid a base wage of **$20.00 to $23.50 an hour.** When they are working away from home, they also may be paid a living or subsistence allowance (from **$25 a day** when in camp to **$100 a day** where there is no camp).

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Oil and Gas Well Drilling Workers and Services Operators occupational group working part-time or full-time earned from **$24,800 to $257,000 a year.** The average salary was **$60,100 a year.**

Other Sources of Information

Canadian Association of Oilwell Drilling Contractors (CAODC) website: www.caodc.ca

Petroleum Human Resources Council of Canada (PHRCC) website: www.petrohrsc.ca

Enform (formerly Petroleum Industry Training Service and Canadian Petroleum Safety Council) website: www.enform.ca

Small Explorers and Producers Association of Canada (SEPAC) website: www.sepac.ca

Related Occupational Profiles

Drilling and Service Rig Managers
Oil and Gas Well Loggers and Testers
Rig Technician
Service Rig Personnel
Well Service Equipment Operator

Related High School Subjects

Community Health; Energy and Mines; Mechanics; and Physical Education

Related Post-Secondary Fields of Study

Trades, Industrial and Related Training

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Driving Instructor

Produced OCTOBER 2003

Driving instructors teach the knowledge and skills required to safely operate vehicles such as cars, motorcycles, transport trucks and buses.

NOC Number(s): 4216.1
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus below average occupational growth in Alberta
Interests: S D M

Duties

Driving instructors teach traffic laws and safety in a classroom setting and help students practice driving skills behind the wheel. Most driving instructors teach inexperienced drivers how to safely operate cars and light trucks. Some teach experienced drivers how to operate special types of vehicles such as motorcycles, large trucks or buses.

When teaching beginners how to operate a vehicle, instructors generally cover the following types of subjects in the classroom:

- traffic rules and regulations
- highway markings, signs and signals
- driver and pedestrian rights
- vehicle control and maintenance
- defensive driving attitudes and techniques
- how to proceed near bicycles and motorcycles
- how to drive in adverse weather conditions
- emergency and first aid measures
- the effects of drugs and alcohol on drivers
- motor vehicle and insurance laws
- use of safety belts.

Then driving instructors work with students individually to give them first-hand driving experience and help them develop defensive driving habits. Sitting next to student drivers in cars and light trucks, instructors show them how to:

- adjust seats and rear view mirrors
- release the emergency brake
- use turn signals
- interpret dashboard instruments
- start the vehicle
- check traffic and move forward
- brake
- put the vehicle in reverse
- make turns and change lanes
- merge into traffic and exit freeways
- park
- handle the vehicle safely in all traffic conditions
- handle situations in which other drivers are not driving safely or courteously
- hook and unhook trailers as required.

In larger vehicles, instructors show students how to conduct pre-trip inspections, operate air brakes and back up.

Working Conditions

Driving instructors' working hours must be flexible enough to suit student needs. Evening and weekend work is generally required. They may work long hours during the summer months and fewer hours in winter months.

Personal Characteristics

Driving instructors need the following characteristics:

- enthusiasm and the ability to instill confidence
- patience and a calm nature
- the ability to get along with all kinds of people
- good communication and teaching skills.

The work is most rewarding for those who enjoy dealing with people, instructing individuals and groups, and having clear rules and organized methods for their work.

Educational Requirements

Most driver training schools train their instructors on an ongoing basis. For a fee, some driver training schools will provide instructor training for non-employees.

To qualify for a driving instructor's license, applicants must have:

- a Class 1, 2 or 4 Alberta Operator's license (which requires a medical examination)
- no more than 6 demerits on their current driving records and no suspensions in the previous two years
- a criminal record check
- a minimum of five years of driving experience in the appropriate class (e.g. automobile instructors must have held a Class 5 operator's license for at least five years, truck driving instructors must have held a Class 1 license).

Applicants for a driving instructor's license must pass a multiple choice exam before they are allowed to take the road test. During the road test, applicants must demonstrate how they would instruct students.

Some schools require applicants for instructor positions to have no criminal record and no more than three demerits on their driver's license.

To teach in the Class 1 category (large trucks etc.), applicants must also hold a certificate from a recognized air brake course. Air brake courses are offered on an as needed basis by public technical institutes and colleges and private driving schools.

Employment and Advancement

(section revised JANUARY 2006)

Driving instructors are employed by commercial driving schools which are generally located in regional centres.

In larger driving schools, experienced instructors may advance to supervisory positions. With additional training or qualifications, driving instructors may start their own driving schools or move to positions dealing with public safety information, vehicle registration and inspection, accident investigation or motor fleet safety supervision.

Driving instructors are part of the larger National Occupational Classification 4216: Other Instructors. In Alberta, over 75 per cent of people employed in this classification work in the following **Educational Services** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Educational Services industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

About 1,800 Albertans are employed in the Other Instructors occupational group which is expected to grow 0.5 to 1.5 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover. (**Note**: Since driving instructors form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for driving instructors.)

The employment turnover rate for driving instructors is fairly high so job openings are relatively frequent.

Salary

(section revised OCTOBER 2005)

Driving instructors are generally paid by the hour so their earnings vary according to the number of hours they work. Earnings also vary depending on whether instructors use company vehicles, or use their own vehicles and pay for car insurance.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Other Instructors occupational group working part-time or full-time earned from **$12,500 to $46,000 a year.** The average salary was **$23,300 a year.**

Other Sources of Information

Alberta Transportation, Licensing Information: www.trans.gov.ab.ca/DriversInfo/Licensing.asp

Related Occupational Profiles

Bus Driver
Chauffeur
Private Trainer/Facilitator
Taxi Driver
Truck Driver

Related High School Subjects

Communication Technology; Language Arts; and Languages (other than English)

Related Post-Secondary Fields of Study

Driver Training

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Dry Cleaning and Laundry Workers

Produced SEPTEMBER 2003

Dry cleaning workers clean clothes, drapes and other items using dry and wet cleaning techniques. Laundry workers clean clothes and linens that can be washed in water.

NOC Number(s): 6681.1
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **O M d**

Duties

The duties performed by dry cleaning and laundry workers vary, depending on the size and nature of the employing organization. Dry cleaning workers may be employed in small, independent dry cleaning stores or in large plants. Laundry workers may work for institutions (e.g. hospitals or prisons), diaper suppliers or commercial laundries which clean large quantities of items such as uniforms, bedding and towels.

In general, **dry cleaning workers:**

- examine articles to be cleaned and determine the type of treatment required
- sort articles according to colour, condition and type of material
- remove spots or stains using appropriate chemicals
- arrange articles in lots of equal weight
- load dry cleaning machines
- select the proper cycle for each load and add cleaning solvent or detergent to the machines (if the machines do not do this automatically)
- replace the filters used to reclaim the cleaning solvent so it can be used again
- smooth and shape clothing, textiles, furnishings and similar articles using a pressing machine.

In large plants, they may specialize in cleaning particular types of goods (e.g. carpets, drapery, fur, or leather and suede).

In general, **laundry workers:**

- sort soiled linen and clothing
- load and unload washing machines and extractors
- clean laundry machinery and buildings.

In large dry cleaning or laundry plants, **markers:**

- sort, record and mark soiled garments, linen and other articles to be dry cleaned or laundered
- examine articles for defects and send them for repairs
- measure draperies to determine charges and record measurements to ensure articles are finished to the original size
- test buttons to see if they must be removed
- remove ornaments and other trimmings where possible before articles are cleaned
- classify garments as to colour and fabric type and indicate the necessary treatment for each
- count the finished articles for completeness of order and verify the count with plant records.

Markers may work at the counter in drive-in plants.

Spotters:

- inspect soiled articles for stains, colour imperfections and items which require special treatment
- determine the cleaning procedure required
- remove stains using spotting agents and steam.

Pressers:

- operate pressing machines to press garments such as pants, shirts, sheets and cushion covers
- hand iron fine lace or silk garments.

In laundries, **sorters**, **finishers** and **folders** alternate between:

- shaking laundry before it is folded
- feeding items such as sheets and towels into pressing machines
- folding finished articles.

Working Conditions

Modern dry cleaning and laundry plants are clean, well-lighted and ventilated, and new machinery operates with a minimum of noise. However, the work is physically demanding and conditions may involve exposure to heat and/or dry cleaning fumes. Lifting items weighing up to 10 kilograms is routinely required.

Dry cleaning and laundry workers may be required to work shifts.

Personal Characteristics

Dry cleaning and laundry workers must be able to do routine, repetitive work and remain mentally alert.

They should enjoy operating machines and taking a methodical approach to their work.

Educational Requirements

Dry cleaning and laundry workers are **trained on the job and may take related distance education courses.** There are no formal education requirements but employers generally prefer to hire job applicants who have at least a Grade 10 education. Computer skills are a definite asset.

Employment and Advancement

(section revised JANUARY 2006)

Dry cleaning workers are employed in commercial dry cleaning plants and shops. Laundry workers are employed in commercial laundry establishments and large institutions such as hospitals. Some large institutions contract laundry services to private organizations instead of hiring laundry staff.

Experienced dry cleaning and laundry workers may advance to supervisory positions.

In Alberta, over 75 per cent of people employed as dry cleaning and laundry workers work in the following industries:

- **Repair, Maintenance, Personal and Other Services**
- **Health Care and Social Assistance**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Employment growth is best for workers who have a good knowledge of textiles and can perform a variety of tasks in the industry.

About 2,650 Albertans are employed in the Dry Cleaning and Laundry Occupations group which is expected to grow 1.1 to 2.1 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 20 to 60 **new** positions will be created each year **in addition** to job openings created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Dry Cleaning and Laundry Occupations group working part-time or full-time earned from **$11,300 to $51,600 a year.** The average salary was **$21,700 a year.**

Related Occupational Profiles

Carpet and Upholstery Cleaner
Room/Housekeeping Attendant

Related High School Subjects

Physical Education

Related Post-Secondary Fields of Study

Personal and Food Services

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Early Childhood Educator

Produced NOVEMBER 2005

Early childhood educators work with infants, toddlers, preschool and school-aged children in a variety of settings.

NOC Number(s): 4214.1
Minimum Education: 1 year post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **S M d**

Duties

In general, early childhood educators:

- develop and implement programs designed to meet children's social, physical, intellectual, creative, cultural and emotional needs in a play-based environment
- build children's self-esteem by establishing routines and positive guidance policies that allow children to feel secure, comfortable and safe
- establish and maintain good communication with children's families and community agencies involved in children's development.

Playschool and child care programs are based on children's interests and learning needs, and include the use of group activities, learning centres, outings and field trips. Activities are varied frequently and are designed to accommodate individual children's unique abilities. For example, a typical day's schedule might include:

- arrival and departure times
- storytime
- music, movement, drama and art activities
- play times, both guided and free
- snacks and meals
- quiet rest time
- outdoor play
- a special guest, event or field trip.

A well-designed educational environment for preschoolers includes opportunities to begin to develop independence, problem-solving, literacy, math and science skills through creative experiences such as imaginative play.

Out-of-school care programs include activities designed to enhance self-esteem and meet the unique needs of children aged six to 12. Educators in these environments are responsible for providing a safe, secure, relaxing and fun place for children to go before school, at lunch, after school and on school holidays.

Working Conditions

The working conditions for early childhood educators vary widely. Small programs in approved day homes may serve up to six children; other child care facilities may provide care for up to 80 children.

Hours also vary:

- Most child care programs are open from 6 or 7 a.m. until 6 p.m. so early childhood educators work a changing shift within those hours. Where non-traditional hour programs are offered, hours of work may vary more.
- Family day home operators may work evenings and weekends.
- Part-time programs or playschool/nursery programs may be offered anytime during the morning or afternoon and run one to five days a week.
- Out-of-school care programs may require staff to work split shifts or only before or after school, or full-time during school holiday periods.
- Family support programs often include evening hours.

Early childhood educators are on their feet most of the day and routinely lift babies and children weighing up to 25 kilograms.

Personal Characteristics

To promote positive attitudes and act as role models for the children in their care, early childhood educators must be able to:

- model appropriate behavior and language
- practice proper hygiene
- use clear communication techniques
- use consistent, positive child guidance strategies
- communicate effectively and work closely with children, parents and colleagues
- deal creatively and effectively with any problem situations that may arise.

They should enjoy dealing with people (especially children), taking a methodical approach to their work, taking responsibility for projects and supervising others.

Educational Requirements

The Alberta Day Care Regulation requires all educators in licensed child care centres and family day home agencies to have completed training in early learning and child care. Out-of-school care programs hire educators with early learning and child care training, or child and youth care training (for more information, see the Child and Youth Care Worker occupational profile).

In Alberta, early learning and child care programs are offered by the following post-secondary institutions:

- **Blue Quills First Nations College** in St. Paul offers Level 2 and Level 3 Early Childhood Development programs.
- **Bow Valley College** in Calgary offers one year certificate and two year diploma programs in Early Childhood Education. These programs are offered in a variety of formats including full-time, part-time, online and by audio-conferencing.
- The **CDI College of Business, Technology and Healthcare** in Calgary and Edmonton offers an 62 week Advanced Early Childhood (part-time) program.
- **Gardner College - A Centre for Christian Studies** in Camrose offers a 30 week certificate program and a 60 week diploma program in Early Childhood Development.
- **Grande Prairie Regional College** offers one year certificate and two year diploma programs in Early Learning and Child Care. All courses in the diploma program are available through tutor assisted distance delivery.
- **Grant MacEwan College** in Edmonton offers a two year Early Childhood Development/Education diploma program which may be taken full-time in Edmonton or Drayton Valley or part-time in other communities.
- **Keyano College** in Fort McMurray offers a one year certificate program and a two year diploma program in Early Childhood Development/Education.
- **Lakeland College** in Vermilion offers a one year certificate program and a two year diploma program in Early Childhood Development. Part-time programs are offered in outlying communities.
- **Lethbridge Community College** offers a one year certificate program and a two year diploma program in Early Childhood Education. These programs are available through distance learning.
- **Maskwachees Cultural College** in Hobbema offers 37 certificate and diploma programs in Early Childhood Development.
- **Medicine Hat College** offers one year certificate and two year diploma programs in Early Childhood Development/Education.
- **Mount Royal College** in Calgary offers one year certificate and two year diploma programs in Early Childhood Development/Education.
- **Red Deer College** offers a one year certificate program and a two year diploma program in Early Childhood Development. Print and Internet-based courses are offered via a combination of teleconferencing and seminars.
- **Reeves College** in Edmonton offers a 42 week Early Childhood Education program.

Entrance requirements vary but usually include a high school diploma or equivalent with English Language Arts 30-1 or English 30 (or minimum marks ranging from 50 to 65 per cent in ELA 30-2 or English 33). Mature students may be admitted with other qualifications. Programs that include practicums may require a Criminal Record Check and a Child Intervention Record check.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

(section revised JANUARY 2006)

Early childhood educators are employed in

- child care centres
- family day homes
- nursery schools
- recreational centres
- kindergartens (as assistants)
- hospital playrooms
- out-of-school care programs
- centres for special needs children
- early intervention programs
- family support programs and resource centres
- women's shelters
- speech therapy offices.

Experienced early childhood educators may advance to supervisory positions or start their own businesses.

Early childhood educators are part a larger early childhood educators and assistants occupational group. In Alberta, most people employed in this classification work in the **Health Care and Social Assistance** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Health Care and Social Assistance industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 16,600 Albertans are employed in the Early Childhood Educators and Assistants occupational group which is expected to grow 1.9 to 2.9 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 310 to 490 **new** positions will be created each year **in addition** to job openings created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Early childhood educators are paid hourly wages that vary tremendously throughout the province. Income and benefits generally depend on the size of the program, the nature of the employing organization, and the level of training the educator has completed.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Early Childhood Educators occupational group working part-time or full-time earned from **$10,900 to $75,000 a year.** The average salary was **$19,600 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Related Occupational Profiles

Child and Youth Care Worker
Educational Assistant
Elementary School Teacher
Nanny

Related High School Subjects

Community Health; Language Arts; and Physical Education

Related Post-Secondary Fields of Study

Social, Community and Protective Services

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Ecologist

Produced SEPTEMBER 2005

Ecologists study the relationships of living things to one another and to their environment, and examine the effects of a wide range of factors such as population size, rainfall, temperature, forest fires and major construction projects.

NOC Number(s): 2121.1
Minimum Education: 6 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: I O D

Duties

Ecologists usually specialize in animal behaviour, botany, marine biology, microbiology, population dynamics, soil science, toxicology, zoology or related disciplines concerned with environmental conservation and management. Often working as part of multi-disciplinary teams, ecologists may conduct research studies into:

- how energy flows through ecosystems
- relationships among predators, parasites and prey
- the types and organization of plant communities in the landscape
- the effects of dam construction, mining, logging and recreational use on natural habitats
- the management of fish, wildlife and forestry resources
- the design of reserves and recovery plans for threatened species of plants and animals
- the effects of pollutants discharged into the air by factories or vehicles on natural vegetation and wildlife
- the effects of chemicals released into rivers and lakes on plant and aquatic animals
- the accumulation of contaminants by ocean fish and mammals
- the restoration of functioning ecosystems
- habitat changes after a fire
- fundamental underlying questions such as what determines population sizes or diet choices, or how nitrogen flows through an ecosystem.

Duties and responsibilities vary from one position to another but, in general, ecologists:

- plan and conduct field research which involves following rigorous scientific procedures to collect water, soil, plant or animal samples, and count and identify organisms
- use the data they collect or analyze existing data to understand and classify vegetation and landscapes
- use computers to develop geographic information systems (GIS) layers and products, maintain data in databases, model problems and evaluate possible solutions
- conduct studies to develop or refine ecological land classifications
- study animals over long periods of time, noting characteristics such as population numbers, life history patterns, behaviour, diet and habitat use
- study and dissect plant and animal specimens in greenhouses and laboratories
- conduct environmental impact assessments
- prepare written reports and recommendations
- provide information, make presentations and give talks for schools, clubs and interest groups
- supervise the work of technologists and technicians.

Working Conditions

Depending on the nature of their projects, ecologists may work outdoors in locations that may be rugged or remote, or indoors in laboratories and offices. Some ecologists work primarily on computers and use data obtained from other scientists.

Ecologists often work long hours. Some projects require hours of observation or weeks of travel. Others require the use of specialized equipment and techniques.

Personal Characteristics

Ecologists need the following characteristics:

- the ability to learn quickly, think logically and persist in a search for answers to complex questions
- an interest in nature
- the ability to remain objective
- good oral and written communication skills
- the ability to work independently and as part of a team.

Some types of field work require considerable physical stamina.

Ecologists should enjoy synthesizing information to develop innovative approaches to problems, using instruments and equipment to perform tasks requiring precision, and supervising research projects.

Educational Requirements

Ecologists must have at least one university degree with a solid grounding in biology (morphology, physiology, genetics, microbiology, zoology, botany, conservation biology), organic and inorganic chemistry, physics, mathematics, calculus, statistics and computer science. Depending on their area of specialization, ecologists also may have an academic background in such diverse subjects as climatology, economics, geology, mathematical modelling, meteorology, oceanography, sociology or soil science.

Most research jobs in ecology require **a graduate degree** in biological sciences: usually a master's degree, sometimes a doctoral degree (PhD). In Alberta, the following post-secondary institutions offer related graduate degree programs.

- The **University of Alberta** in Edmonton offers Master of Science (M.Sc.)and PhD degree programs in Biological Sciences. Admission requirements include a minimum grade point average (GPA) in the last two years of the applicant's previous degree program. The required GPA depends on the specialization.
- The **University of Calgary** offers M.Sc. and PhD degree programs in Biological Sciences. Applicants must have a GPA of at least 3.2/4 in the last two years of their previous degree program, be proficient in the English language and submit a statement of their research interests.
- The **University of Lethbridge** offers M.Sc. degree programs in Biological Sciences. Applicants must have a GPA of at least 3.0/4 on the last 20 graded university level semester courses in their previous degree.

University transfer programs and bachelor's degree programs in the biological sciences are offered by post-secondary institutions throughout the province. Admission requirements vary but generally include a high school diploma with an average of at least 60 per cent (up to 80 per cent for some programs) in English Language Arts 30-1 (or English 30), Pure Math 30 (or Math 30), Biology 30, Chemistry 30 and one other 30-level subject (Math 31 and Physics 30 recommended). It is the student's responsibility to ensure that the transfer courses they choose to take will be accepted for credit at the institution to which they wish to transfer.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

For information about other post-secondary programs related to resource management and environmental science, see the Agrologist, Conservation Officer, Environmental Auditor, Forester and Park Warden occupational profiles.

Other Requirements

Professional Biologist is a protected title under Alberta's Professional and Occupational Associations Registration Act. This means that to call yourself a Professional Biologist, you must be a registered member of the Alberta Society of Professional Biologists (ASPB). You do **not** have to be registered with ASPB if you do not call yourself a Professional Biologist.

Employment and Advancement

(section revised JANUARY 2006)

Ecologists are employed by the following types of organizations:

- provincial and federal governments
- universities and colleges
- research institutions
- conservation organizations
- environmental consulting firms
- large private corporations such as manufacturers of agricultural products, forestry companies, paper manufacturers, and oil and gas companies.

Corporations employ ecologists to help them safeguard supplies of raw materials, make sure their operations comply with government regulations, and monitor processes and products.

Related summer work experience or volunteer experience is a definite asset when university graduates are looking for work. Entry-level positions are often short-term contract positions.

Those who have bachelor's degrees may be hired for non-research positions that involve conducting laboratory tests or inspections, or collecting routine field data. Advancement opportunities are limited for ecologists who have only a bachelor's degree. Some take further education to become high school teachers (for more information, see the Secondary School Teacher occupational profile). A doctoral degree usually is required for university and independent research positions, and may be required for advancement to senior management positions.

Ecologists are part of the larger National Occupational Classification 2121: Biologists and Related Scientists. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Professional and Technical Services**
- **Public Administration**
- **Health Care and Social Assistance.**

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- time of year (for seasonal jobs)
- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

About 1,100 Albertans are employed in the Biologists and Related Scientists occupational group which is expected to grow 1.3 to 2.3 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 10 to 30 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since ecologists form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for ecologists.) Specialists concerned with conservation biology, toxic waste, air quality and water quality are expected to be in greatest demand.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Salaries for ecologists vary depending on their educational qualifications, experience and specific field of study.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Biologists occupational group working part-time or full-time earned from **$29,400 to $103,200 a year.** The average salary was **$64,800 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Society of Professional Biologists website: www.aspb.ab.ca

Canadian Council for Human Resources in the Environment Industry website: www.cchrei.ca

Related Occupational Profiles

Agrologist
Biochemist
Biologist
Biotechnologist
Entomologist
Food Scientist
Forester
Geneticist
Interpretive Naturalist
Microbiologist
Pharmacologist
Physiologist
Toxicologist

Related High School Subjects

Agriculture; Energy and Mines; Forestry; Information Processing; Language Arts; Legal Studies; Mathematics; Science (Biology; and Chemistry); and Wildlife

Related Post-Secondary Fields of Study

Agriculture and Related Technologies; Environment, Forestry and Related Studies; Mathematics; Sciences; and Social Sciences, Law and Religious Studies

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For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Economist

Produced NOVEMBER 2005

Economists conduct research, analyze economic information and prepare reports and plans that are used to analyze various economies and economic problems, forecast and anticipate future problems and opportunities and offer ideas for solutions and new initiatives.

NOC Number(s): 4162
Minimum Education: 6 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: I M D

Duties

In general, economists:

- devise systems for collecting economic and statistical data regarding economic resources, how those resources are utilized, and the production and distribution of goods and services
- develop models for projecting economic and related activities
- compile, analyze and interpret results from a wide range of economic data and activity
- help others interpret economic data
- write reports to inform policy development and decision-making in government or business.

The work is essentially interpretive and analytical in nature, with an increasing emphasis on analyzing and comparing data from other economies as well as Canada's economy, and on evaluating the costs and benefits associated with alternative courses of action. Specific duties vary depending on the economist's area of specialization and employer.

Economists may specialize in various areas, including money and banking, consumer economics, financial economics, public finance, monetary and fiscal policy, international trade and finance, industrial organization, natural resource or environmental economics, health, labour, urban and regional, or agricultural economics.

Agricultural and natural resource/environmental economists work for government, industry or industry associations, often specializing in a particular or closely related group of resource commodities. In general, they:

- monitor and analyze trends in prices, supplies and demand, including the impact of economic activity and regulatory changes on particular commodities
- estimate the non-market benefits and costs associated with the use of natural resources
- forecast future prices and supplies, crop sizes and the effects of various policies.

Econometricians specialize in a branch of economics that relies primarily on statistics, mathematics and economic theory to develop, among other things, methods of forecasting economic variables and explaining economic behaviour. They usually work for government or large business firms. In general, they:

- use complex mathematical models of the economy for the purpose of analyzing and forecasting key economic variables
- produce forecasts of particular economic parameters which can be used for study, analysis, policy development and decision-making.

Financial economists work for government, banks, investment firms, insurance companies and other financial institutions. Large industries often employ economists interested in macroeconomics, money and banking, and domestic and international finance. In general, financial economists:

- study overall economic, financial and monetary conditions to analyze economic activity and forecast trends
- monitor and analyze factors affecting the money supply; stock, bond and other financial markets; the movement of interest, inflation and exchange rates; and other money market developments
- provide advice on the financing of capital requirements and the placing of investments.

Government-employed economists usually work in specialized areas in federal, provincial and municipal government departments, particularly in treasury and finance departments. In general, they:

- perform cost-benefit analyses to determine how tax dollars should be spent to maximize the benefits to taxpayers (especially for capital projects)
- study employment, inflation, tax policy, tariff and trade policies, specific industries, energy and environmental policies, social programs and assessment of the need for policy change and, if required, potential alternatives
- monitor social and political trends and policies, and their impact on the economy.

Industrial/business economists typically work for large businesses and major industrial enterprises and, in general:

- provide and interpret data on economic conditions and trends to assist management in making marketing decisions and analyzing production and investment alternatives
- study regional and national economic activity, foreign trade and capital flows, and capital markets
- perform cost-benefit analyses and feasibility studies for industrial projects,
- analyze the effects of government policies and regulations and international agreements on business
- advise management regarding business strategies.

Labour/industrial-relations economists work for unions, associations, employers and governments and, in general:

- study labour supply and demand, wages and hours of work, cost of living, labour market discrimination and worker productivity
- study the effect of labour legislation, unemployment insurance, industrial accident provisions, welfare plans, education, collective bargaining, trade unions and industrial factors on the labour force and the economy
- recommend ways to improve arbitration and conciliation techniques for settling labour disputes.

University and college economists usually:

- teach courses in economics, finance and business
- conduct research to improve understanding of how the economy works and the behaviour of stakeholder groups in the economy
- publish their findings for review, analysis and use by others.

Working Conditions

Economists work in office environments, often using computers and large databases to compile and analyze data. Some work from offices in their homes.

Working conditions can vary significantly over the course of the year. When key decisions are pending or economic events are affecting business or government, economists may work long hours, under pressure, to provide accurate, timely analyses.

Personal Characteristics

Economists need the following characteristics:

- strong mathematical, statistical and analytical skills
- an interest in current affairs
- an above-average ability to use plain language to express complex ideas, in person and on paper.

They should enjoy developing innovative methods and economic models, analyzing information and making economic forecasts, advising others, finding solutions to problems and being part of decision-making in government and business activities.

Educational Requirements

An honours bachelor's degree in economics is sufficient for research assistant positions. A Master of Arts (MA) degree in economics is usually required to become a professional economist. Teaching positions at the post-secondary level require a doctoral (PhD) degree.

Admission to master's degree programs requires an acceptable average in the last two years of a related four year bachelor's degree program (preferably, an honours program).

In Alberta, the following post-secondary institutions offer four year degree programs in economics:

- **The King's University College** in Edmonton offers a four year Bachelor of Arts (BA) degree program in Politics, History and Economics. The entrance requirement is an average of at least 60 per cent in English Langauge Arts 30-1 (or English 30) and four other appropriate Grade 12 subjects.

- The **University of Alberta** in Edmonton offers four year Bachelor of Arts (BA) and BA (Honours) programs in Economics. The entrance requirement is a competitive average (65 to 85 per cent) in English Language Arts 30-1 (or English 30), a 30 level language other than English or Pure Math 30 (or Math 30), and three other appropriate 30 level subjects (Social Studies 30 and Math 31 recommended). The University also offers master's and doctoral degree programs in Economics in Edmonton and bachelor degree programs in Camrose.
- The **University of Calgary** offers four year BA and BA (Honours) programs and a five year co-op BA program in Economics. The entrance requirement is a high school diploma or equivalent with a competitive average in English Language Arts 30-1 (or English 30), Pure Math 30 (or Math 30 or 31) and three of the following: Biology 30, Chemistry 3, Physics 30, Science 30, Social Studies 30, a 30 level language other than English, one five-credit Grade 12 subject. The University also offers a BA in Economics and Society program, and master's and doctoral degree programs in Economics.
- The **University of Lethbridge** offers four year BA and five year combined degree programs in Economics. The entrance requirement is an average of at least 65 per cent in English Language Arts 30-1 (or English 30), Pure Math 30 (or Math 30, or equivalent), two other appropriate 30 level subjects, and a fifth Grade 12 subject.

For information about Bachelor of Commerce and Bachelor of Management degree programs in finance, see the Investment Advisor occupational profile. For information about agriculture-related programs including agricultural economics, see the Agrologist occupational profile.

Post-secondary institutions throughout the province offer university transfer programs that allow students to apply up to two years of study toward university bachelor's degree programs. It is the student's responsibility to ensure that the courses they choose to take will be accepted for credit at the institution to which they wish to transfer.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

(section revised JANUARY 2006)

Economists work in many sectors of the economy but are usually employed by:

- large organizations in finance, business and industry
- universities and colleges
- municipal, provincial and federal governments and crown corporations
- private consulting firms
- large international organizations such as the World Bank and the International Monetary Fund.

Many economists are employed as economic consultants to advise business, industry, government, labour and others. Some economists work for consulting firms; others are self-employed.

Economists are part of the larger National Occupational Classification 4162: Economists and Economic Policy Researchers and Analysts. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Public Administration**
- **Oil and Gas Extraction**
- **Professional and Technical Services**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 750 Albertans are employed in the Economists and Economic Policy Researchers and Analysts occupational group which is expected to grow 1.3 to 2.3 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover. (**Note**: Since economists form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for economists.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Salaries vary considerably in this occupation. Economists often earn more after promotion to managerial positions.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Economists and Economic Policy Researchers and Analysts occupational group working part-time or full-time earned from **$27,600 to $109,100 a year.** The average salary was **$58,800 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Canadian Foundation for Economic Education (CFEE) website: www.cfee.org

Related Occupational Profiles

Accountant
Demographer
Management Consultant
Mathematician
Statistician

Related High School Subjects

Agriculture; Energy and Mines; Enterprise and Innovation; Financial Management; Forestry; Information Processing; Language Arts; Legal Studies; Logistics; Management and Marketing; Mathematics; Science; Social Studies; and Tourism Studies

Related Post-Secondary Fields of Study

Social Sciences, Law and Religious Studies

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Editor

Produced JULY 2005

Editors help writers, publishers and others prepare written text that is accurate, appealing and effective for publication or broadcast.

NOC Number(s): 5122
Minimum Education: 4 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **D I S**

Duties

Editors often have supervisory and project management responsibilities in addition to editorial responsibilities in the book, magazine or newspaper publishing industry or the broadcast industry. They also may do freelance work for non-traditional publishers such as website developers, government departments and large corporations that produce annual reports, press releases, educational texts, journals and newsletters.

Book editors may acquire new books for publication with their publishing companies or supervise the progress of literary works from manuscript to printed book. Editors responsible for acquiring new books for publication (often called acquisitions editors):

- contact and interview prospective authors of fiction and nonfiction works
- develop story or content ideas and solicit manuscripts
- evaluate submitted manuscripts
- make recommendations to the publisher
- negotiate contracts with authors or authors' agents.

Editors who supervise the progress of an author's work (often called developmental editors) may:

- consult with the writer
- conduct their own research on the topic
- arrange for copyright permissions
- locate and hire designers and illustrators
- hire another editor on a contract basis to check content, style, organization and grammar, and edit the manuscript in consultation with the author
- hire proofreaders and, when necessary, indexers
- make arrangements for printing
- keep the project within a predetermined timeline and budget.

Newspaper editors' job titles are generally related to their position in a hierarchy of editors or to the topic areas for which they are responsible. Copy editors:

- write headlines
- co-ordinate or do page layouts
- edit written text to make it concise and readable
- correct errors in spelling, grammar, punctuation and style
- check for potentially libellous content, good taste, accuracy, fairness and balance in each story.

City editors responsible for local news coverage:

- assign reporters to cover stories in the community
- gather information about stories via telephone, wire, e-mail, radio, television, press releases, reporters or their own initiative.

Newspaper editors in other areas supervise reporters covering topics such as sports, business, entertainment, fashion, food, photography, design and graphics.

Managing editors and news editors:

- organize production according to strict deadlines
- make decisions about the value and relevance of proposed articles and allot space accordingly
- plan the thrust and emphasis of news coverage with news staff
- assess news at international, national, provincial and municipal levels (assisted by wire editors who monitor news reports from other parts of the country and world)
- check and edit news content for accuracy of style
- make the final selection of and assign priorities to stories and photos
- maintain the newspaper's budget by controlling hiring, promotions and salaries.

In addition to being responsible for everything in the news and comment columns, the editor-in-chief:

- works with the publisher to write and administer policies
- supervises and co-ordinates the work of other editors.

Magazine editors have responsibilities similar to those of book and newspaper editors but most magazines do not employ large numbers of editors. Small magazines may have one or two editors. They may:

- determine the style of the magazine
- plan content by suggesting story ideas weeks or months in advance
- negotiate writers' fees
- assign projects to staff writers or hire freelance wrtiers to research and write pieces
- ensure that deadlines are met
- write articles and editorials
- oversee art directors, proofreaders, fact checkers and photographers
- proofread galleys (proofs made from type before it is arranged in a page format)
- dummy the magazine (prepare a rough mock-up of the entire magazine) to establish the general layout of articles and advertising.

Freelance editors are hired by governments, businesses and other organizations to produce newsletters, bulletins, website content, magazines, training programs, texts and research studies. They may:

- conduct research
- write and rewrite copy
- supervise an author's work
- evaluate manuscripts
- edit copy for content, style and punctuation
- update written texts or revise texts to suit different audiences
- oversee the artwork, layout, word processing and printing
- index and proofread.

Broadcast editors prepare copy for news announcers on radio and television. In general, they:

- help reporters write copy in a conversational style
- assign reporters to cover events
- select teletype news and taped world news.

Working Conditions

Editors often work long, irregular hours with overtime required to meet deadlines. Some newspaper editors work from 3 to 11 p.m., others work day shifts.

Depending on the industry in which they work, editors may spend most of their day alone, with many different people, or with one or two people. Newspaper editors work in loud and hectic surroundings. Book and freelance editors may work at home because editing manuscripts requires privacy and quiet.

Personal Characteristics

Editors need the following characteristics:

- curiosity and ambition
- excellent writing and research skills
- the ability to criticize effectively
- organization and time management skills
- decision-making and leadership skills

- the ability to work well under time pressure.

They should enjoy planning and co-ordinating the work of others, analyzing information and solving problems, and negotiating with writers and others.

Educational Requirements

A variety of backgrounds can qualify a person to work as an editor but **most editors have a university degree**. A liberal arts education focusing on English (particularly useful for book editing) or journalism, political science, economics, psychology, history and philosophy is recommended. A working knowledge of media law, and word-processing and publishing programs is recommended.

Some editors need specialized knowledge in addition to writing and editing skills. For example, editors in the technical textbook industry may need related post-secondary education in a scientific or technological field.

In Alberta, most-secondary institutions offer liberal arts degree programs. The following institutions offer programs specifically in communications or writing:

- **Athabasca University** offers a two year Bachelor of Professional Arts degree program in Communications Studies by distance education. Applicants must hold a two or three year diploma in a related field.
- **Grant MacEwan College** in Edmonton offers a four year Bachelor of Applied Communications in Professional Writing degree program. The entrance requirement is a high school diploma with an average of at least 65 per cent in English Language Arts 30-1 (or English 30), a 30 level language other than English or Pure Math 30 (or equivalent) and three other Grade 12 courses selected from specified groups.
- **Lethbridge Community College** offers a two year Communication Arts diploma program. The entrance requirement is a high school diploma with at least 60 per cent in English Language Arts 30-1 (or 70 per cent in English Language Arts 30-2, or equivalent) and Social Studies 30.
- **Mount Royal College** in Calgary offers a four year Bachelor of Applied Communications degree program. The entrance requirement is an average of at least 60 per cent in English Language Arts 30-1 (or equivalent), Social Studies 30 and three other appropriate Grade 12 subjects.
- the **University of Alberta** in Edmonton offers a Master of Arts Communications and Technology degree program. The entrance requirement is a suitable Bachelor's degree with a minimum Grade Point Average (GPA) of 3.0/4 and three years of professional work experience. The University of Alberta also offers a Writing program through the Faculty of Extension.
- the **University of Calgary** offers a four year Bachelor of Arts degree program in Communications Studies. The entrance requirement is an average of at least 60 per cent in English 30 (or equivalent); Pure Math 30, Applied Math 30 or Math 31; and three of the following: Biology 30, Chemistry 30, Physics 30, Social Studies 30, Science 30, a 30 level language other than English, one five credit Grade 12 subject.

Post-secondary institutions throughout the province offer university transfer programs that allow students to apply up to two years of college course work toward university Bachelor's degree programs. It is the student's responsibility to ensure that the courses they choose to take will be accepted for credit at the institution to which they wish to transfer.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Individual courses and occasional workshops in editing are offered by post-secondary institutions and organizations such as:

- the **Banff Centre School of Fine Arts**
- the **Editors' Association of Canada**
- the **Canadian Newspaper Association**
- the **Alberta Weekly Newspapers Association**.

Newspaper editors must have several years of experience reporting or writing. For information about these occupations and related education programs, see the Creative Writer, Reporter and Technical Writer occupational profiles.

Many copy editors need to be familiar with publishing and printing systems and technologies.

Employment and Advancement

(section revised JANUARY 2006)

Competition for editorial positions is keen and most editorial posts go to qualified people who already work in the field. Skilled freelance editors who have access to modern communication technology may work for organizations all over the world. They must purchase their own equipment and supplies, and manage all aspects of their businesses (e.g. marketing, accounting).

Most magazine publishing companies in Alberta hire only a few editors. Literary magazines are usually edited part-time by English professors or interested volunteers.

Prospective book editors should be willing to work on a freelance basis or take an entry level position in a publishing firm (in publicity or promotion production, or rights and permissions). When an assistant editor's job becomes vacant, people who have publishing experience and a related degree have a much better chance of being hired than those who do not have experience in a publishing office.

Promotions in the newspaper business typically involve more supervisory responsibilities. For example, a copy editor may become a section editor or be promoted to an assistant city editor position. The opportunity to work at a larger newspaper is often seen as a promotion. For example, many weekly newspaper editors move into junior daily positions. Occasionally, an editor may move from newspapers to magazines or the broadcast media.

In Alberta, over 75 per cent of people employed as editors work in the following industries:

- **Information, Culture and Recreation**
- **Management, Administrative and Other Support Services**
- **Professional and Technical Services**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 1,350 Albertans are employed in the Editors occupational group which is expected to grow 1.0 to 2.0 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 10 to 30 **new** positions will be created each year **in addition** to job openings created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Editors occupational group working part-time or full-time earned from **$18,700 to $87,700 a year.** The average salary was **$41,100 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Weekly Newspapers Association (AWNA) website: www.awna.com

Canadian Newspaper Association (CNA) website: www.cna-acj.ca

Editors' Association of Canada/Association Canadienne des Reviseurs (EAC/ACR) website: www.editors.ca

Related Occupational Profiles

Creative Writer
Critic
Reporter
Technical Writer

Related High School Subjects

Communication Technology; Language Arts; Legal Studies; and Social Studies

Related Post-Secondary Fields of Study

Communications; Humanities and Languages; and Social Sciences, Law and Religious Studies

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Educational Assistant

Produced JANUARY 2006

Educational assistants help teachers with many time-consuming instructional and non-instructional tasks.

NOC Number(s): 6472
Minimum Education: 1 year post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **S M i**

Duties

Educational assistants are employed by schools, child care centres and other educational organizations to provide learning support to students and general support to teachers and other professionals. In a school setting, educational assistants may:

- work under the supervision of one or several teachers
- work with children who have special needs
- work independently with students or in the classroom
- work as part of a multidisciplinary team
- assist with playground supervision
- perform clerical tasks as required.

Specific duties vary from one position to another but, in general, educational assistants:

- implement lesson and behavioural plans for individual students with special needs
- motivate and encourage students to participate in learning activities
- use effective instructional techniques to help students with lessons and assignments
- demonstrate activities, set up and dismantle displays, play areas and work areas
- observe and report student behaviour and progress
- assist students who have special needs with personal care
- facilitate and encourage positive student behaviours
- correct homework and tests, administer oral tests or act as a scribe for students
- collect and prepare learning materials and use technology (for example, computers, audio-visual equipment) to support student learning
- assist with special events and activities
- perform related tasks such as photocopying and laminating materials, completing attendance, health and behavioural reports, updating student records, collecting money from students for school-related projects or helping in the school library
- may supervise children during lunch and recess breaks or field trips.

Working Conditions

Educational assistants work indoors except when supervising children outdoors or going on field trips. They may be required to routinely lift items weighing up to 10 kilograms. Sometimes, heavier lifting may be required (for example, to help children move in and out of wheelchairs).

Educational assistants employed in school systems usually have the same holiday schedule as teachers including summer, winter and spring breaks. However, they work on a contract basis and therefore are not paid during the summer months. Hours of work may include some after school hours to attend staff or committee meetings.

Educational assistants employed in the private sector may be employed the full calendar year.

Personal Characteristics

Educational assistants need the following characteristics:

- good health and physical fitness
- the ability to deal with the emotional and mental stress of working with groups of children who are often active and demanding
- the ability to interact with students and staff in a tactful, empathetic manner
- good speaking and writing skills
- the ability to take direction and work independently as well as in a team environment
- good observation skills
- the ability to keep student information confidential
- a positive attitude
- flexibility, patience, sensitivity, tolerance, enthusiasm, creativity and imagination.

They should enjoy working with people (especially children who have physical, emotional or behavioural disabilities), having clear rules and guidelines for their work, and finding innovative ways to handle situations.

Educational Requirements

Employers generally prefer to hire educational assistants who have a high school diploma and related post-secondary education. A first aid certificate and criminal record check also may be required. Related experience is a definite asset.

In Alberta, educational or teacher assistant training programs are offered at the following post-secondary institutions:

- **Bow Valley College** in Calgary offers a 36 week Educational Assistant certificate program. The entrance requirement is a high school diploma with English Language Arts 30-1 or English 30 (or 65 per cent in ELA 30-2 or English 33), or equivalent.
- **Columbia College**, a private vocational school in Calgary, offers full-time (25 weeks) and part-time (50 weeks) Human Services Professional certificate programs. The entrance requirement is a high school diploma with a 60 per cent average, or equivalent.
- **Grande Prairie Regional College** offers a one year (9.5 months) Teacher Assistant certificate program. Applicants must be at least 18 years of age and have a high school diploma with English Language Arts 30-1 or English 30 (or 65 per cent in ELA 30-2 or English 33), or equivalent. Applicants also must have a current CPR certificate (Basic Rescuer) and Standard First Aid Certificate. Students can take this program on a full-time or part-time basis. Some courses are offered on-line.
- **Grant MacEwan College** in Edmonton offers a 10 month Special Needs Educational Assistant certificate program that is also available on a part-time evening basis and by distance delivery. Applicants must have a high school diploma with at least 65 per cent in English Language Arts 30-1 or English 30 (or 75 per cent in ELA 30-2 or English 33), submit two letters of reference, complete a career profile and attend a program information session. Outreach courses are offered in communities throughout Northern Alberta on a part-time basis.
- **Keyano College** in Fort McMurray offers a one year (9.5 months) Educational Assistant certificate program that may be taken full-time or part-time. The entrance requirement is a high school diploma with English Language Arts 30-1 or English 30 (or 65 per cent in ELA 30-2 or English 33), or equivalent.
- **Lakeland College** in Vermilion offers a one year Teacher Assistant certificate program. Entrance requirements include English Language Arts 30-1 or English 30 (or 65 per cent in ELA 30-2 or English 33) and Pure or Applied Math 10, or equivalent. Evening courses are offered on a part-time basis in Lloydminster and Strathcona County.
- **Lethbridge Community College** offers a one year Educational Assistant certificate program full-time and part-time evenings and weekends. The entrance requirement is a high school diploma with at least 60 per cent in English Language Arts 30-1 or ELA 30-2, or equivalent. Some courses are available by electronic or print-based distance education.
- **Medicine Hat College** offers a:
    - one year Education Assistant certificate program in Brooks and Medicine Hat. The entrance requirement is a high school diploma with English Language Arts 30-1 or English 30 (or 65 per cent in ELA 30-2 or English 33), or equivalent.
    - one year Educational Support Services diploma program in Medicine Hat. The entrance requirement is an Education Assistant certificate or a diploma or degree in a related field of study such as Child and Youth Care, Social Work or Education.
- **Northern Lakes College** offers a one year Teacher Assistant certificate program in Grouard, Slave Lake and various locations via CentaOne onsite. Entrance requirements include English Language Arts 30-1 or English 30

(or 60 per cent in ELA 30-2 or English 33) and Applied Math 10, or equivalent. There are two compulsory practicums in this program.

- **Portage College** in Lac La Biche offers one year certificate and two year diploma Educational Assistant programs. The entrance requirement for both programs is Grade 12 or equivalent including English Language Arts 30-1 or 30-2, or English 30 or 33. Part-time and independent study courses are available throughout northeastern Alberta.
- **Red Deer College** offers a one year Educational Assistant certificate program that is also available by distance education. The entrance requirement is a high school diploma with English Language Arts 30-1 or English 30 (or 65 per cent in ELA 30-2 or English 33), or equivalent.
- The **University of Calgary** offers part-time certificate programs designed for people who are currently working as educational assistants or have related experience.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

Educational assistants may work full-time or part-time in:

- public, separate and private schools
- child care centres
- home schooling environments
- parent link, native liaison or other social services in which educational programming is offered.

Advancement requires further education.

In Alberta, most educational assistants work in the **Educational Services** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Educational Services industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 10,350 Albertans are employed in the Elementary and Secondary School Teacher Assistants occupational group which is expected to grow 1.3 to 2.3 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 130 to 240 **new** positions will be created each year **in addition** to job openings created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Salaries for educational assistant positions vary widely throughout the province.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Elementary and Secondary School Teacher Assistants group working part-time or full-time earned from **$9,200 to $36,500 a year.** The average salary was **$25,000 a year.**

Other Sources of Information

EDinfo website: www.alis.gov.ab.ca/edinfo

Related Occupational Profiles

Child and Youth Care Worker
Early Childhood Educator
Elementary School Teacher
Occupational Therapist Assistant
Rehabilitation Practitioner
Speech-Language Pathologist Assistant

Related High School Subjects

Communication Technology; Information Processing; Language Arts; Mathematics; Physical Education; and Social Studies

Related Post-Secondary Fields of Study

Education and Library Studies

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Educational Counsellor

Produced JANUARY 2006

Educational counsellors advise students on educational, personal and career-related issues and co-ordinate counselling services for students, parents and teachers.

NOC Number(s): 4143
Minimum Education: 6 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **S I d**

Duties

Educational counsellors include **school guidance counsellors** who work in elementary, junior and senior high schools, and **university and college counsellors** who work in post-secondary institutions such as universities, colleges and technical institutes.

Educational counsellors work with individual students and groups of students. In general, they:

- counsel students who are experiencing personal, social or behavioral problems
- provide career or vocational counselling services which may include administering tests and inventories to help students identify their interests, aptitudes and abilities
- collect and make available a wide range of educational and occupational information (for example, information about awards, scholarships and financial assistance programs)
- establish and supervise peer counselling and peer tutoring programs
- act as a resource for teachers and faculty members involved in helping students or graduates identify and pursue employment opportunities
- present self-help or information sessions on subjects related to education and career planning
- help students improve their study habits
- assist students interested in travel and study programs
- refer students to appropriate services and agencies when required.

School guidance counsellors also help students select appropriate courses, schedule subjects and choose educational programs. They may have additional teaching duties.

Counsellors in secondary and post-secondary institutions may supervise work experience programs for students.

Educational counsellors work closely with a variety of other professionals. School guidance counsellors work with teachers, speech therapists, school psychologists, social workers and public health nurses. University and college counsellors work co-operatively with instructors and personnel from the Registrar's Office, work experience programs and placement services.

Working Conditions

Educational counsellors usually work standard school or office hours but may spend additional evening and weekend hours supervising extra-curricular activities or attending meetings. They usually work in office and classroom environments. The work can be emotionally demanding and stressful, particularly when caseloads are high.

Personal Characteristics

Educational counsellors need the following characteristics:

- a genuine interest in helping people resolve their problems
- good verbal and written communications skills
- the ability to listen and comprehend with empathy and understanding, without prejudice or judgment
- excellent interpersonal skills
- the creative ability required to develop new programs or ways of doing things

- good organizational skills
- a tolerance for ambiguity and an ability to adapt to change quickly.

They should enjoy counselling students, co-ordinating information and developing innovative approaches to problems, and administering and interpreting standardized tests.

Educational Requirements

Educational counsellors need a **master's degree** in educational psychology, applied psychology or counselling.

In Alberta, the following institutions offer related master's degree programs.

- The **Campus Alberta Graduate Program in Counselling**, a tri-university partnership of Athabasca University, the University of Calgary and the University of Lethbridge, offers a Master of Counselling degree program with a specialization in school counselling. The entrance requirement is a minimum grade point average (GPA) of 3.00/4 in the last ten full-course equivalents of a four year bachelor's degree program that includes specified courses in psychology or educational psychology and a counselling skills course, or equivalent.
- **Athabasca University** offers a Master of Couselling degree program with specializations in counselling psychology and school counselling.
- **University of Alberta** in Edmonton offers a Master of Education degree program in educational psychology. In addition to a 3.0 GPA in the last two undergraduate years, a valid teaching certificate and teaching experience are required.
- **University of Calgary** offers Master of Education and Master of Science degree programs in applied psychology with a specialization in counselling psychology.
- **University of Lethbridge** offers an M.Ed. program with a specialization in counselling psychology.

Post-secondary institutions throughout Alberta offer suitable four year bachelor's degree programs and university transfer programs. Entrance requirements vary but, in general, include a high school diploma with a competitive average ranging from 60 to 80 per cent (depending on the program) in English Language Arts 30-1 (or English 30) and four other approved or specified Grade 12 subjects (for example, Social Studies 30, a 30 level language other than English, a 30 level math and/or science courses). Admission to Athabasca University is open to residents of Canada who are at least 18 years of age.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Educational counsellors who have related master's degrees may become chartered psychologists (for more information, see the Psychologist profile.)

Employment and Advancement

Educational counsellors work for:

- schools and post-secondary institutions
- correctional facilities
- government agencies
- private practices.

Advancement opportunities to administrative positions vary depending on the size and nature of the employing organization, and the counsellor's qualifications.

In Alberta, most people employed as educational counsellors work in the **Educational Services** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Educational Services industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 1,700 Albertans are employed in the Educational Counsellors occupational group which is expected to grow 1.0 to 2.0 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 10 to 40 **new** positions will be created each year **in addition** to job openings created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Salaries for educational counsellors vary considerably depending on the employing organization and the counsellor's qualifications.

According to the **2005 Alberta Wage and Salary Survey**, Albertans working part-time or full-time in the Educational Counsellors occupational group earned **up to $84,700 per year.** Those with three years of experience earned from **$25,400 to $54,200**.

Counsellors who have teaching certificates are paid according to the same salary grid as elementary and secondary school teachers in their school jurisdictions.

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Teachers' Association (ATA) website: www.teachers.ab.ca

Canadian Counselling Association (CCA) website: www.ccacc.ca

Related Occupational Profiles

Addictions Counsellor
Career Development Professional
Special Needs Teacher

Related High School Subjects

Communication Technology; Community Health; Language Arts; Languages (other than English); Management and Marketing; Mathematics; and Social Studies

Related Post-Secondary Fields of Study

Education and Library Studies; and Social Sciences, Law and Religious Studies

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For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Electrical Contractor

Produced FEBRUARY 2004

Electrical contractors erect or install electrical installations or equipment. They may also repair, service or maintain electrical installations or equipment.

NOC Number(s): 7212
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **D i o**

Duties

Electrical contractors apply for and obtain permits for electrical work. They may do various types of electrical work or specialize in particular types of projects:

- residential (eg. houses, condominiums, apartment buildings)
- commercial (eg. office buildings, shopping malls)
- institutional (eg. schools, hospitals, government funded projects)
- industrial (eg. refineries, factories).

Duties and responsibilities vary from one position to another but, in general, electrical contractors:

- negotiate project requirements with customers
- estimate material, equipment, labour and other costs
- prepare bids for the electrical work involved in construction projects
- negotiate contract terms with clients
- plan and schedule the work
- purchase materials
- hire and supervise electricians and apprentices
- negotiate with unions and other parties
- track progress and ensure compliance with architectural plans, blueprints, safety codes and other specifications
- co-ordinate activities with other construction managers
- ensure that projects are completed on schedule and within budget
- prepare progress reports for clients
- prepare invoices and manage receivables.

Electrical contractors usually have a skeleton crew of employees and hire additional help as needed.

Working Conditions

Working conditions on construction sites vary considerably from one site to another. Electrical contractors often work long, irregular hours to meet project deadlines. Some travel may be required to visit clients, job sites and suppliers.

On construction sites, electrical contractors must wear safety gear (eg. hard hat, safety boots) to reduce the risk of injury. Dealing with unexpected delays and unrealistic expectations, and collecting overdue payments can be stressful.

Personal Characteristics

Electrical contractors need the following characteristics:

- exceptional organizational skills
- good oral and written communication skills
- creative problem-solving skills
- leadership skills
- good negotiation skills.

They should enjoy directing and supervising the work of others, co-ordinating and scheduling activities and resolving problems, and applying their knowledge of electrical systems and equipment under demanding conditions.

Educational Requirements

Electrical contractors need related education and supervisory experience. They may be journeyman electricians or have post-secondary education in electrical engineering. For more information, see the Electrician, Electrical Engineering Technologist and Electrical Engineer occupational profiles.

The **Electrical Contractors Association of Alberta** offers a Professional Education Program that includes the following courses:

- Accounting Principles
- Business and Public Relations
- Assessing and Finalyzing the Tender
- Legal Implications
- Project Management
- Safety Principles.

Other Requirements

(section revised OCTOBER 2004)

Professional Electrical Contractor is a protected title under Alberta's Professional and Occupational Associations Registration Act and Professional Electrical Contractors Regulation. To call yourself a Professional Electrical Contractor, you must be registered with the Electrical Contractors Association of Alberta (ECAA). You do **not** have to be registered if you do not call yourself a Professional Electrical Contractor.

Employment and Advancement

(section revised JANUARY 2006)

Electrical contractors may be self-employed or employed by large general contracting companies. Advancement generally takes the form of building an increasingly successful business or being assigned larger, more complex projects.

Electrical contractors are part of the larger National Occupational Classification 7212: Contractors and Supervisors, Electrical Trades and Telecommunications Occupations. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Construction**
- **Information, Culture and Recreation**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

About 2,800 Albertans are employed in the Contractors and Supervisors, Electrical Trades and Telecommunications Occupations group which is expected to grow 1.0 to 2.0 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 20 to 60 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since electrical contractors form only a small part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for electrical contractors.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Earnings for self-employed electrical contractors vary considerably from contractor to contractor and from year to year.

According to the **2005 Alberta Wage and Salary Survey**, Albertans working part-time or full-time in the Contractors and Supervisors, Electrical Trades and Telecommunications Occupations group earned **up to $84,100 a year.** The average salary was **$62,800 a year**.

Other Sources of Information

Alberta Apprenticeship and Industry Training website: www.tradesecrets.org

Alberta Construction Industry "Trade Up!" website: www.careersconstruction.com

Calgary Construction Association website: www.cca.cc

Construction Sector Council website: www.csc-ca.org

Electrical Contractors Association of Alberta website: www.ecaa.ab.ca

Related Occupational Profiles

Civil Engineer
Civil Engineering Technologist
Electrical Engineer
Electrical Engineering Technologist
Electrician

Related High School Subjects

Construction Technologies; Design Studies; Electro-Technologies; Enterprise and Innovation; Financial Management; Language Arts; Legal Studies; Management and Marketing; Mathematics; Physical Education; and Science (Physics)

Related Post-Secondary Fields of Study

Engineering and Science Technologies; Engineering, Architecture and Related Studies; and Trades, Industrial and Related Training

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For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Electrical Engineer

Produced AUGUST 2004

Electrical engineers design, construct, analyze and test electrical and electronic components and systems, and are responsible for their safe operation.

NOC Number(s): 2133
Minimum Education: 4 years post-secondary education/training
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: **I O D**

Duties

Electrical engineers work with systems that generate, transmit, distribute, store, control or use electromagnetic energy or electrically coded information. They may be involved in the development or manufacture of a wide variety of electrical and electronic devices, circuits, systems, products and equipment.

Electrical engineers may specialize in:

- biomedical engineering (e.g. medical imaging, intensive care monitoring)
- communications engineering (e.g. the compression, transmition, routing and reception of audio or video information)
- control systems engineering (e.g. the control of chemical processes such as those in petroleum extraction and refinement)
- digital systems engineering (e.g. the development of hardware systems for communications, process control, computers and signal processors)
- electronic materials and nanotechnology (e.g. the integration of semi-conductor devices and nanoscale sensors)
- electronics engineering (e.g. radio, television, navigational or automotive instrumentation)
- electromagnetics and photonics (e.g. radio frequency antennae and laser applications)
- power systems engineering (e.g. the generation, transmission and distribution of electrical energy).

In each of these fields, electrical engineers may further specialize in one or more of the following:

- maintaining and trouble-shooting existing systems
- conducting research
- designing systems
- designing electronic product prototypes (models)
- designing manufacutring processes
- developing test and quality control procedures to ensure that products meet quality specifications and safety standards.

In addition to their technical responsibilities, electrical engineers often are required to:

- study design proposals, write reports and make recommendations regarding the design, development or manufacture of products and systems.
- prepare contract documents, including drawings and specifications, for the construction of projects.
- supervise and co-ordinate the work of others.

They must constantly update their knowledge and skills to keep up with advances in technology.

For information about those who specialize in computer engineering, see the Computer Engineer and Software Engineer occupational profiles.

Working Conditions

Electrical engineers generally work in an office environment but also may travel to construction sites or manufacturing facilities. They may work long hours and experience a great deal of pressure to meet deadlines and design standards. In some circumstances, electrical engineers may be exposed to chemical gasses or work in severe climate conditions.

Personal Characteristics

Electrical engineers need the following characteristics:

- natural curiosity and good observation skills
- analytical and problem-solving skills
- a strong aptitude for mathematics and science
- the ability to pay close attention to details
- persistence
- good organization and time management skills
- excellent oral and written communication skills
- the ability to work effectively in teams of people from varied backgrounds.

They should enjoy being innovative, doing work that requires precision, working independently and making decisions.

Educational Requirements

The minimum education requirement for electrical engineers is a **four year bachelor's degree in electrical engineering.**

In Alberta, two universities offer four year bachelor of science (B.Sc.) degree programs in electrical engineering:

- the **University of Alberta** in Edmonton
- the **University of Calgary**.

The admission requirement for the engineering programs at both universities is a high school diploma with a minimum average of 78 or 80 per cent in English 30, Pure Math 30, Math 31, Chemistry 30 and Physics 30.

Both universities also offer co-operative education or internship programs in which periods of academic study alternate with periods of planned work experience in industry. Students usually take five years to complete a co-operative or internship program.

Post-secondary institutions throughout the province offer university transfer programs that allow students to apply up to two years of study toward university bachelor's degree programs. It is the student's responsibility to ensure that the courses they choose to take will be accepted for credit at the institution to which they wish to transfer.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Other Requirements

(section revised OCTOBER 2004)

Under Alberta's Engineering, Geological and Geophysical Professions Act, you must be a registered member of the Association of Professional Engineers, Geologists and Geophysicists of Alberta (APEGGA) to practice as a Professional Engineer. You do **not** have to be registered if you work under the direct supervision of a Professional Engineer and do not call yourself a Professional Engineer.

Employment and Advancement

(section revised JANUARY 2006)

Electrical engineers may be employed by:

- consulting firms
- electrical utilities
- construction companies
- governments
- manufacturers of electrical equipment
- resource extraction and processing companies
- transportation companies
- communication companies (including telecommunication companies)
- health authorities
- universities and other research institutions.

Many engineers spend their entire careers in technical jobs. Some engineers become managers, administrators or sales representatives.

Electrical engineers are part of the larger National Occupational Classification 2133: Electrical and Electronics Engineers. In Alberta, over 75 per cent of people employed in this classification in the following industries:

- **Professional and Technical Services**
- **Other Manufacturing**
- **Information, Culture and Recreation**
- **Utilities**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 3,800 Albertans are employed in the Electrical and Electronics Engineers occupational group which is expected to grow 2.5 to 3.5 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 90 to 140 **new** positions will be created each year **in addition** to job openings created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised SEPTEMBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Electrical and Electronics Engineers occupational group working part-time or full-time earned from **$21,100 to $130,700 a year.** The average salary was **$75,100 a year.**

Other Sources of Information

EDinfo website: www.alis.gov.ab.ca/edinfo

Association of Professional Engineers, Geologists and Geophysicists of Alberta (APEGGA) website: www.apegga.org

Related Occupational Profiles

Aerospace Engineer
Canadian Forces Personnel - Commissioned Officer
Computer Engineer
Electrical Contractor
Electrical Engineering Technologist
Electronics Engineering Technologist

Related High School Subjects

Design Studies; Electro-Technologies; Information Processing; Language Arts; Management and Marketing; Mathematics; and Science (Chemistry; and Physics)

Related Post-Secondary Fields of Study

Engineering, Architecture and Related Studies

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Electrical Engineering Technologist

Produced SEPTEMBER 2004

Electrical engineering technologists apply their knowledge and understanding of electrical theory in business, engineering and industry settings.

NOC Number(s): 2241.1
Minimum Education: 2 years post-secondary education/training
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: O I M

Duties

In general, electrical engineering technologists work as part of a team with other technologists and engineers to:

- design or modify drawings for electrical installations in residential, commercial and industrial buildings
- design or modify drawings for electrical transmission and distribution systems
- write electrical specifications for electrical designs and equipment
- oversee industrial networks and data communications
- manage electrical energy systems through load flow, power quality and energy management
- prepare project cost estimates from electrical drawings
- participate in project maintenance and risk management
- write and perform commissioning procedures for electrical installations
- install and maintain electrical control systems and industrial automation systems
- maintain electrical equipment such as switch gear, control circuits, transformers, motors, protective relays, variable speed drives and programmable logic controllers
- use computers to test and control electrical equipment, and perform specialized functions (e.g. designing electrical installations, determining the fault level of current, co-ordinating relays, completing a harmonic analysis of a feeder circuit).

Working Conditions

Many electrical engineering technologists work regular hours in engineering, consulting or sales offices. Others work shifts in industrial complexes, power generating facilities, laboratories or construction sites. They must follow safety procedures to avoid injury or death from electrical shock. Overtime may be required to meet deadlines.

In some jobs, medium lifting (up to 25 kilograms) is required.

Personal Characteristics

Electrical engineering technologists need the following characteristics:

- the ability to adapt to changes and adopt new ideas
- an aptitude for mathematics and science (especially physics)
- the analytical ability required to interpret plans and diagrams, trouble-shoot circuits and test materials and products
- the ability to identify and discriminate colours
- the ability to lead and work well with others as part of a team
- good oral and written communication skills.

They should enjoy working with tools, computers, instruments and machinery at tasks requiring precision, and taking a methodical approach to analyzing problems and finding innovative solutions.

Educational Requirements

The minimum educational requirement to work as an electrical engineering technologist is an appropriate **two year diploma of technology**. In Alberta, the following institutions offer programs in electrical engineering technology.

- **Northern Alberta Institute of Technology (NAIT)** in Edmonton offers a two year Electrical Engineering Technology diploma program. The admission requirement is a high school diploma or equivalent with English 30 or 33, Pure Math 30 or Math 30 (or at least 60 per cent in Math 33) and one of Physics 30, Chemistry 30 or Science 30. Priority will be given to students entering with Pure Math 30. Applicants presenting Applied Math 30 will be assessed and may be required to upgrade.
- **Southern Alberta Institute of Technology (SAIT)** in Calgary offers a two year Electrical Engineering Technology diploma program. The admission requirement is a high school diploma or equivalent with English 30, English 33, English Language Arts 30-1 or ELA 30-2; Pure Math 30 or Math 30; and Physics 20 or Science 30.

A limited number of applicants are accepted to these programs each year and competition for admission is keen. For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Continuing education programs may be offered on an as needed basis.

Other Requirements

(section revised OCTOBER 2004)

Certification with the Alberta Society of Engineering Technologists (ASET) is voluntary.

Under Alberta's Engineering, Geological and Geophysical Professions Act, Registered Professional Technologists - Engineering must be ASET members to engage in a defined scope of engineering practice as registered by the Association of Professional Engineers, Geologists and Geophysicists of Alberta (APEGGA).

Employment and Advancement

(section revised JANUARY 2006)

Electrical engineering technologists work in areas such as:

- power systems and protection
- electrical design or field testing
- construction
- industrial automation
- industrial networks and communication
- energy systems (including alternative energy)
- electrical maintenance
- system operations
- metering
- energy management
- power quality
- lighting design
- programmable logic controllers
- technical sales.

They are employed by:

- electrical and electronic suppliers
- utility companies and industrial plants
- electrical and construction contractors
- engineering consulting firms
- manufacturers and distributors
- agencies for electrical industry de-regulation
- government and regulatory agencies
- building and industrial maintenance firms
- oil and gas companies.

Experienced electrical engineering technologists may advance to supervisory positions or establish their own businesses.

Electrical engineering technologists are part of the larger National Occupational Classification 2241: Electrical and Electronics Engineering Technologists and Technicians. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Professional and Technical Services**
- **Information, Culture and Recreation**
- **Other Manufacturing**
- **Oil and Gas Extraction**
- **Public Administration**
- **Educational Services**
- **Management, Administrative and Other Support Services**
- **Construction**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 6,500 Albertans are employed in the Electrical and Electronics Engineering Technologists and Technicians occupational group which is expected to grow 2.4 to 3.4 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 150 to 230 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since electrical engineering technologists form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for electrical engineering technologists.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Salaries for electrical engineering technologists vary considerably.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Electrical and Electronics Engineering Technologists occupational group working part-time or full-time earned from **$22,100 to $126,100 a year.** The average salary was **$74,400 a year.**

For more detailed information, see ASET's Annual Salary Surveys.

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Society of Engineering Technologists (ASET) website: www.aset.ab.ca

Related Occupational Profiles

Automated Systems Technologist
Avionics Technologist
Biomedical Engineering Technologist
Broadcast Maintenance Technologist
Computer Service Technician
Electrical Contractor
Electrical Engineer
Electrician
Electronics Engineering Technologist
Engineering Design and Drafting Technologist

Related High School Subjects

Design Studies; Electro-Technologies; Information Processing; Language Arts; Mathematics; Physical Education; and Science (Chemistry; and Physics)

Related Post-Secondary Fields of Study

Engineering and Science Technologies

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Electrical Motor Systems Technician

Produced FEBRUARY 2006

Electrical motor systems technicians test, rebuild and repair electric motors, generators, transformers, controllers and related electrical and mechanical equipment used in commercial, industrial and institutional establishments.

NOC Number(s): 7333
Minimum Education: Apprenticeship Trade
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **O M I**

Duties

Electrical motor systems technicians maintain the electric motors and related equipment used to power machinery and equipment in various establishments such as production plants and large businesses. In general, they:

- diagnose problems and dismantle electric motors, transformers, switchgear, electric welders, generators and other electrical and mechanical equipment for servicing, modification or repair
- remove and replace shafts, bearings, commutators and other components, referring to blueprints or service manuals as required
- wind and assemble various types of coils for electric motors or transformers and reinstall them
- balance armatures or rotors, weld and braze or solder electrical connections, and align and adjust parts to close tolerances to reassemble items.

Working Conditions

Electrical motor systems technicians primarily work indoors in large shops and production plants. Those who work for firms that contract their services to other organizations may remove and replace burned out motors on the customer's premises. Travel may be required to perform maintenance on equipment. Most electrical motor systems technicians work a 40-hour week with some overtime required when equipment breaks down.

Electrical motor systems technicians may be required to lift items weighing up to 25 kilograms.

Personal Characteristics

Electrical motor systems technicians need the following characteristics:

- good mechanical aptitude
- manual dexterity
- the ability to pay careful attention to detail.

They should enjoy doing precision work.

Educational Requirements

To work in Alberta, electrical motor systems technicians must be ONE of the following:

- registered apprentices
- certified journeymen
- working for an employer who is satisfied that they have the skills and knowledge expected of certified journeymen
- self-employed.

To **register** with **Alberta Apprenticeship and Industry Training**, apprentices must:

- must have at least Alberta Math 23 or Pure Math 20 or Applied Math 20 (or equivalent) or hold a certificate of completion of apprenticeship that is issued by any jurisdiction in Canada in a related electrical trade or pass an entrance exam

- find a suitable employer who is willing to hire and train an apprentice. Most employers prefer to hire high school graduates and may select apprentices from among their current employees. Good marks in math, physics, drafting and industrial arts are particularly important.

The **term of apprenticeship** is four years (four 12-month periods) that include a minimum of 1,500 hours of on-the-job training and eight weeks of technical training each year. High school students can become apprentices and gain credits toward apprenticeship training and a high school diploma at the same time through the Registered Apprenticeship Program (RAP).

Applicants who have related training or work experience may be eligible for credit or certification.

Electrical motor systems technician apprentices may attempt the Interprovincial Exam in the final period of their apprenticeship training and, if successful, are granted a Red Seal (which is recognized in most parts of Canada).

Technical training is arranged by Alberta Apprenticeship and Industry Training and is currently offered at being offered at the Southern Alberta Institute of Technology (SAIT) in Calgary.

Pre-employment programs for prospective apprentices and continuing education programs for journeymen may be offered on an as needed basis by the institution(s) listed above or other schools.

Employment and Advancement

Electrical motor systems technicians are employed by companies that repair and service electric appliances and equipment and by contractors in the field.

Electrical motor systems technicians may progress to positions that involve working with larger and more complicated electric motors, transformers, switchgear or other apparatus, or that involve testing and diagnosing problems to a greater extent. They may also advance to supervisory positions or set up their own contracting firms. Alberta certified journeyman electrical motor systems technicians who have the supervisory or management skills required by industry may apply for an Achievement in Business Competencies Blue Seal by contacting Alberta Apprenticeship and Industry Training.

Electrical motor systems technicians are part of the larger National Occupational Classification 7333: Electrical Mechanics. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Repair, Maintenance, Personal and Other Services**
- **Construction**
- **Other Manufacturing**
- **Utilities**
- **Retail Trade**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 450 Albertans are employed in the Electrical Mechanics occupational group which is expected to grow 1.5 to 2.5 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover. (**Note**: Since electrical motor systems technicians form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for electrical motor systems technicians.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Apprentice electrical motor systems technicians earn at least 55 per cent of the journeyman wage rate in their place of employment in the first year, 65 per cent in the second, 75 per cent in the third and 85 per cent in the fourth. According to the Alberta Provincial Apprenticeship Committee for this trade, journeyman wage rates vary, but generally range from **$20 to $32 an hour plus benefits** (2004 estimate). It is common for journeymen to work an average of 15 per cent extra in paid overtime hours.

According to the **2005 Alberta Wage and Salary Survey**, Albertans working part-time or full-time in the Electrical Mechanics occupational group earned **up to $72,800 a year**. Those with three years of experience earned from **$35,400 to $58,200 a year.** The average salary was **$52,000 a year**.

Other Sources of Information

Alberta Apprenticeship and Industry Training website: www.tradesecrets.org

Related Occupational Profiles

Appliance Service Technician
Motorcycle Mechanic
Outdoor Power Equipment Technician
Power System Electrician

Related High School Subjects

Design Studies; Electro-Technologies; Mathematics; Mechanics; Physical Education; and Science (Physics)

Related Post-Secondary Fields of Study

Trades, Industrial and Related Training

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Electrician

Apprenticeship and Industry Training

Produced FEBRUARY 2006

Electricians install, alter, repair and maintain electrical systems designed to provide heat, light, power, control, signals or fire alarms for all types of buildings, structures and premises.

NOC Number(s): 7241, 7242
Minimum Education: Apprenticeship Trade - Grade 12
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: **O i m; O i m**

Duties

Duties vary from one position to another but, in general, electricians:

- read and interpret electrical, mechanical and architectural drawings and electrical code specifications to determine wiring layouts
- cut, thread, bend, assemble and install conduits and other types of electrical conductor enclosures and fittings
- pull wire through conduits and holes in walls and floors
- position, maintain and install distribution and control equipment such as switches, relays, circuit breaker panels and fuse enclosures
- install, replace, maintain and repair electrical systems and related electrical equipment
- install data cabling
- splice, join and connect wire to form circuits
- test circuits to ensure integrity and safety
- install and maintain fibre optic systems.

Some electricians may specialize in specific types of installations:

- residential (housing developments)
- commercial (office buildings)
- institutional (hospitals)
- industrial (plants, factories).

Electricians may specialize in construction, maintenance and other types of electrical work.

Working Conditions

Working conditions vary from one job to another. Electricians who work indoors may encounter anything from clean, open areas to dirty, cramped spaces. Those who work outdoors may have to work on scaffolds. They usually work a 40-hour, five-day work week with overtime when required. There is some risk of injury due to accidental electric shock.

Electricians may be required to lift items weighing up to 25 kilograms.

Personal Characteristics

Electricians need the following characteristics:

- good communication and reading skills
- an aptitude for math
- mechanical ability
- physical strength and stamina
- the ability to distinguish colours to work with colour-coded wiring
- the ability to work in high places
- the ability to get along well with co-workers
- the ability to keep up to date with changing technology
- creativity

- the ability to do precision work.

Those who install or maintain equipment in existing homes or businesses must also be neat and have good customer service skills.

Educational Requirements

To work in Alberta, electricians must be registered apprentices or certified journeymen.

To **register** with **Alberta Apprenticeship and Industry Training**, apprentices must:

- have an Alberta high school diploma with Math 20 or 23 or Pure Math 20 or Applied Math 20 and at least 10 credits in a high school science (or equivalent) or pass an entrance exam
- find a suitable employer who is willing to hire and train an apprentice. Most employers prefer to hire high school graduates and may select apprentices from among their current employees. Courses in English, math and physics are particularly important.

The **term of apprenticeship** is four years (four 12-month periods) that include a minimum of 1,500 hours of on-the-job training and eight weeks of technical training in the first three years and a minimum of 1,350 hours of on-the-job training and 12 weeks of technical training in the fourth. High school students can become apprentices and gain credits toward apprenticeship training and a high school diploma at the same time through the Registered Apprenticeship Program (RAP).

Applicants who have related training or work experience may be eligible for credit or certification.

Electrician apprentices may attempt the Interprovincial Exam in the final period of their apprenticeship training and, if successful, are granted a Red Seal (which is recognized in most parts of Canada).

Technical training is arranged by Alberta Apprenticeship and Industry Training and is currently offered:

- Keyano College in Fort McMurray at the main campus and by mobile delivery at the Suncor site
- Lakeland College in Vermilion
- Lethbridge Community College
- Medicine Hat College in Brooks
- the Northern Alberta Institute of Technology (NAIT) in Edmonton and Grande Prairie
- Red Deer College
- the Southern Alberta Institute of Technology (SAIT) in Calgary.

Lakeland College, Lethbridge Community College and NAIT also offer technical training by distance delivery.

Competency-Based Apprenticeship Training (CBAT) is also offered by Lakeland College, Lethbridge Community College, Medicine Hat College, NAIT and Red Deer College.

Outside the apprenticeship program, the following post-secondary institutions offer related training:

- **Keyano College** in Fort McMurray offers a one year Electrical Engineering Technology transfer program. The second year is offered at SAIT. The entrance requirement is a high school diploma with English 30 or 30-1, Physics 30 and Math 30 or Pure Math 30 or equivalent.
- The **Northern Alberta Institute of Technology (NAIT)** in Edmonton offers a two year Electrical Engineering Technology diploma program. The entrance requirement is a high school diploma or equivalent with English 30 or 33, one of Physics 30, Chemistry 30 and Science 30 and Pure Math 30 or successful completion of Transitional Mathematics 101 or at least 65 per cent in Algebra 35.
- The **Southern Alberta Institute of Technology (SAIT)** in Calgary offers a two year Electrical Engineering Technology diploma program. The entrance requirement is a high school diploma or equivalent with Pure Math 30 or Math 30, English 30 or 33 or English Language Arts 30-1 or 30-2, Physics 20 or Science 30.

Pre-employment programs for prospective apprentices and continuing education programs for journeymen may be offered on an as needed basis by the institution(s) listed above or other schools.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

Electricians are employed by construction and maintenance contractors, manufacturers, resource companies and other large organizations. Especially in construction, there may be no guarantee of permanent work.

Electricians may advance to positions such as foreman, superintendent, estimator or electrical inspector or start their own contracting businesses. Alberta certified journeyman electricians who have the supervisory or management skills required by industry may apply for an Achievement in Business Competencies Blue Seal by contacting Alberta Apprenticeship and Industry Training.

Membership in a trade union is voluntary. However, some contractors employ only union people.

In Alberta, electricians are part of two larger National Occupational Classifications: 7241 Electricians (Except Industrial and Power System) and National Occupational Classification 7242 Industrial Electricians.

Over 75 per cent of people employed in the Electricians (Except Industrial and Power System) group work in the **Construction** industry.

Over 75 per cent of people employed in the Industrial Electricians group work in the following industries:

- **Construction**
- **Oil and Gas Extraction**
- **Transportation and Warehousing**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

About 10,650 Albertans are employed in the Electricians (Except Industrial and Power System) occupational group which is expected to grow 2.5 to 3.5 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 260 to 380 **new** positions will be created each year **in addition** to job openings created by employment turnover.

Over 3,550 Albertans are employed in the Industrial Electricians occupational group which is expected to grow 1.6 to 2.6 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 50 to 100 **new** positions will be created each year **in addition** to job openings created by employment turnover.

(**Note**: Since electricians form only a part of the larger occupational groups on which these forecasts are based, only a portion of the new positions created will be for electricians.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Apprentice electricians earn at least 50 per cent of the journeyman wage rate in their place of employment in the first year, 60 per cent in the second, 70 per cent in the third and 80 per cent in the fourth. According to the Alberta Provincial Apprenticeship Committee for this trade, journeyman wage rates vary, but generally range from **$17 to $32 an hour plus benefits** (2004 estimate).

According to the **2005 Alberta Wage and Salary Survey**, Albertans working part-time or full-time in the:

- Electricians (Except Industrial and Power System) occupational group earned from **$16,900 to $114,300 a year.** The average salary was **$63,400 a year**.
- Industrial Electricians occupational group earned from **$32,200 to $74,600 a year.** The average salary was **$61,300 a year**.

Other Sources of Information

Alberta Apprenticeship and Industry Training website: www.tradesecrets.org

Post-secondary institution calendars or websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Construction Industry "Trade Up!" website: www.careersconstruction.com

Calgary Construction Association website: www.cca.cc

Construction Sector Council website: www.csc-ca.org

Electrical Contractors Association website: www.ecaa.ab.ca

Related Occupational Profiles

Communication Technician
Construction Craft Labourer
Electrical Contractor
Electrical Engineering Technologist
Home Inspector
Lighting Technician
Power Lineman
Power System Electrician
Recreation Vehicle Service Technician
Safety Codes Officer
Safety Officer
Security Alarm Installer

Related High School Subjects

Construction Technologies; Design Studies; Electro-Technologies; Language Arts; Mathematics; Physical Education; and Science (Physics)

Related Post-Secondary Fields of Study

Trades, Industrial and Related Training

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Electrologist

Produced JANUARY 2004

Electrologists use a needle-type epilator to permanently remove unwanted hair.

NOC Number(s): 6482.3
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus below average occupational growth in Alberta
Interests: **M S O**

Duties

Electrologists remove unwanted hair by introducing a fine sterilized needle into a hair follicle and transmitting a controlled pulse of electricity through the needle. This cauterizes and destroys the hair production area. The loosened hair is then removed with forceps. Since this is an invasive procedure, electrologists must follow the health standards and guidelines established by Alberta Health and Wellness.

Electrologists work with one client at a time. In general, they:

- discuss needs and preferences with clients and find out if they have any physical conditions which would make electrolysis inadvisable
- use an antiseptic to clean the skin area that has unwanted hair
- attach a sterilized needle inside a round-tipped probe to an electrolysis machine and postition a large magnifying glass or microscope
- insert the round-tipped probe into each follicle, activate a preset electrical current, withdraw the probe and remove the hair with forceps
- clean the skin again after treatment.

Each session usually takes from 15 minutes to several hours, depending on the client's tolerance for discomfort. The number of sessions required depends on the extent and nature of the unwanted hair.

When not working directly with clients, electrologists:

- sterilize forceps
- clean their equipment and work area
- keep records of services provided.

They may also be responsible for booking appointments and accepting payments.

Working Conditions

Electrologists work indoors in clean, quiet surroundings and usually wear uniforms or lab coats. They may work full-time or part-time. Saturday and evening work is often required.

Personal Characteristics

Electrologists need the following characteristics:

- good eyesight and steady hands and nerves
- a safety conscious and caring attitude
- the ability to put people at ease
- a neat, well-groomed appearance.

They should enjoy:

- taking a methodical approach to compiling information
- serving and assisting people
- using specialized tools and equipment.

Educational Requirements

(section revised DECEMBER 2005)

There are **no standard education requirements** for electrologists in Alberta. However, the Federation of Canadian Electrolysis Associations recommends that new entrants to the occupation take a training program in electrology that is at least 500 hours in length and conducted by qualified teachers who have a minimum of five years' experience working as electrologists.

In Alberta, the following private vocational schools offer training programs in electrology:

- **Alberta Academy of Aesthetics** in Edmonton
- **European Institute of Esthetics** in Edmonton
- **International Academy of Esthetics** in Sherwood Park.

Program content, length, cost and admission requirements vary. In general, the entrance requirement is a high school diploma or mature student status.

Prospective electrologists should discuss their career plans with practicing electrologists before enrolling in a training program.

Other Requirements

Electrologists must pass the Canadian Certified Electrologist (CCE) exam consisting of both a written and practical component to become members of the Electrolysis Society of Alberta (ESA).

ESA members who have two years of full-time experience (or three years of part-time experience) as electrologists may qualify for the designation Certified Professional Electrologist.

Employment and Advancement

(section revised JANUARY 2006)

Electrologists are employed, or work on a contract basis, in electrolysis studios and some beauty salons. Some electrologists own and operate their own studios. Most provide other esthetic services as well as electrolysis.

Advancement in this occupation generally takes the form of building a larger clientele.

Electrologists are part of the larger National Occupational Classification 6482: Estheticians, Electrologists and Related Occupations. In Alberta, over 75 per cent of people employed in this classification work in the **Repair, Maintenance, Personal and Other Services** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Repair, Maintenance, Personal and Other Services industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 3,350 Albertans are employed in the Estheticians, Electrologists and Related Occupations group which is expected to grow 0.5 to 1.5 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 10 to 60 **new** positions will be created each year **in addition** to job openings created by employment turnover. However, employment prospects are not as good for electrologists as they are for estheticians in general. Competition from salons offering other methods of hair removal is limiting growth in this occupation.

Salary

(section revised OCTOBER 2005)

Electrologists' overall earnings vary considerably depending on the location and the person's reputation. Daily earnings depend on the rates charged and number of treatments performed.

Electrologists may rent space in a beauty salon and keep their earnings separate from those of the salon, or they may be employed by the salon and be paid a basic salary plus commission. Those who operate their own shops must pay overhead costs (rent, utilities, etc.) from their earnings. They may earn very little in their first year of operation.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Estheticians, Electrologists and Related Occupations group working part-time or full-time earned from **$11,100 to $45,500 a year.** The average salary was **$19,600 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

Electrolysis Society of Alberta website: www.onlineesa.com

Related Occupational Profiles

Cosmetician
Esthetician
Hairstylist
Nail Technician

Related High School Subjects

Community Health; Cosmetology Studies; and Language Arts

Related Post-Secondary Fields of Study

Personal and Food Services

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Electroneurophysiology (ENP) Technologist

Produced NOVEMBER 2004

Electroneurophysiology (ENP) technologists use sensitive electronic diagnostic equipment to record and evaluate the electrical activity of patients' central and peripheral nervous systems to assist physicians in diagnosing diseases, injuries and abnormalities.

NOC Number(s): 3218.1
Minimum Education: 2 years post-secondary education/training
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: **O M i**

Duties

Electroneurophysiology technologists use specialized diagnostic equipment to record and evaluate the electrical activity of the brain and nerves, and electrical activity resulting from stimulation of sensory pathways. They usually specialize in one of three areas:

- electromyography
- electroencephalography
- evoked potential.

Duties and responsibilities vary from one specialty to another but, in general, ENP technologists:

- prepare patients for neurodiagnostic testing by explaining the procedure
- obtain medical history information pertinent to the interpretation of test results
- apply electrodes to predetermined, measured locations on the patient's head or other parts of the body
- operate neurodiagnostic testing equipment
- provide care and assistance to patients during procedures
- prepare test results for interpretation by physicians
- maintain equipment and troubleshoot technical problems
- facilitate communication among health care professionals (e.g. biomedical engineering staff, physicians, nurses and unit clerks).

Experienced technologists also may assist in training ENP students.

Working Conditions

Electroneurophysiology technologists may work shifts or work standard weekday hours and be on call evenings and weekends. They spend much of their working time on their feet and may be required to do some bending and lifting to help very ill patients.

ENP technologists must follow standard security, electrical safety and infection control precautions. In some circumstances, they may be required to move equipment on portable carts to patients' bedsides in wards, intensive care units or operating rooms.

Personal Characteristics

Electroneurophysiology technologists need the following characteristics:

- maturity and emotional stability
- the ability to communicate understanding and reassurance to patients who may be afraid
- the ability to pay close attention to details
- the ability to work with little direct supervision.

They should enjoy using computers and electronic equipment to perform tasks requiring precision, having clear guidelines for their work and dealing with people.

Educational Requirements

No formal training program for electroneurophysiology technologists is offered in Alberta. However, some Alberta hospitals meet the requirements for training technologists set by the Canadian Board of Registration of Electroencephalograph Technologists (CBRET) and the **Board of Registration of Electromyography Technologists of Canada** (BRETC).

Usually, electromyography (EMG) technologists have completed post-secondary courses in anatomy, physiology or electronics before they are accepted for training on the job. For information about post-secondary programs that include related courses, see the Kinesiologist and Registered Nurse occupational profiles. Admission requirements vary but generally include a high school diploma with 30-level courses in English, math, sciences, social studies or a language other than English.

The **British Columbia Institute of Technology (BCIT)** in Burnaby, British Columbia offers a two year electrophysiology diploma program every second year beginning in September. The program combines classroom teaching with practicum experience. The entrance requirement is a high school diploma or equivalent education with courses in algebra, physics and chemistry. Graduates must take further training before they are eligible to take examinations conducted by CBRET for registration in electroencephalography (EEG) or BRETC for registration in electromyography (EMG).

Employment and Advancement

(section revised JANUARY 2006)

Electroneurophysiology technologists are employed in:

- acute care hospitals
- private clinics
- research labs
- specialized facilities such as epilepsy and sleep centres.

Registered ENP technologists may specialize in work such as monitoring brain function or spinal cord integrity during surgery (intraoperative monitoring) or recording physiological data while the patient is asleep (polysomnography).

ENP technologists are part of the larger National Occupational Classification 3218: Electroencephalographic and other Diagnostic Technologists. In Alberta, most people employed in this classification work in the **Health Care and Social Assistance** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Health Care and Social Assistance industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 100 Albertans are employed in the Electroencephalographic and Other Diagnostic Technologists occupational group which is expected to grow 3.5 to 4.5 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover. (**Note**: Since ENP technologists form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for ENP technologists.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Electroencephalographic and other Diagnostic Technologists occupational group working part-time or full-time earned from **$44,700 to $58,100 a year.** The average salary was **$57,300 a year.**

In general, unregistered technologists receive 90 per cent of a registered technologist's salary. Private clinics may pay slightly lower salaries than hospitals.

For information about current collective agreements in the public and not-for-profit sectors, see the Health Sciences Association of Alberta (HSAA) website.

Other Sources of Information

Alberta College of Medical Diagnostic and Therapeutic Technologists (ACMDTT) website: www.acmdtt.com

Association of Electromyography Technologists of Canada (AETC) website: www.aetc.ca

Canadian Association of Electroneurophysiology Technologists (CAET) website: www.caet.org

Health Sciences Association of Alberta (HSAA) website: www.hsaa.ca

Related Occupational Profiles

Cardiology Technologist
Diagnostic Medical Sonographer
Magnetic Resonance Technologist

Related High School Subjects

Community Health; Language Arts; Mathematics; Physical Education; and Science (Biology; Chemistry; and Physics)

Related Post-Secondary Fields of Study

Health Care and Medical Sciences

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Electronic Technician

Produced FEBRUARY 2006

Electronic technicians service and repair household and business electronic equipment such as radios and televisions, compact disc players and personal computer systems.

NOC Number(s): 2242
Minimum Education: Apprenticeship Trade - Grade 12
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **O I M**

Duties

Some electronic technicians specialize in repairing particular types of equipment such as radio and television receivers, stereo components, video cameras, two-way radio communication systems, video and audio tape recorders, bio-medical systems, computer systems or security systems. Other technicians work with a variety of electronic equipment.

Duties vary from one position to another but, in general, electronic technicians:

- talk to customers and conduct routine checks to find the source of a malfunction
- inspect and test electronic equipment, components and assemblies using multi-meters, circuit testers, oscilloscopes, logic probes and other test equipment
- diagnose and locate circuit, component and equipment faults
- follow equipment manuals and drawings to adjust, align, replace or repair parts
- keep records such as work orders and test and maintenance reports
- access and distribute product information using electronic means such as e-mail, databases and the Internet.

Working Conditions

Electronic technicians generally work indoors. Some technicians travel to the customers' locations to make routine repairs and, if necessary, transport faulty equipment back to the shop. They work a 40-hour week with occasional overtime when required. Some may have to work some evenings or weekends for the customer's convenience.

Electronic technicians may be required to lift items over 25 kilograms.

Personal Characteristics

Electronic technicians need the following characteristics:

- good manual dexterity
- normal colour vision
- good customer service skills
- the ability to keep up to date with changing technology.

They should enjoy doing precise, detailed work and problem-solving with little direction.

Educational Requirements

To work in Alberta, electronic technicians must be registered apprentices or certified journeymen.

To **register** with **Alberta Apprenticeship and Industry Training**, apprentices must:

- have an Alberta Grade 12 education with a "B" standing in Math 20 or 23, Pure Math 20 or Applied Math 20 and Physics 20 (or equivalent) or pass an entrance exam
- find a suitable employer who is willing to hire and train an apprentice. Most employers prefer to hire high school graduates and may select apprentices from among their current employees. Demonstrated mechanical aptitude and mathematical ability are particularly important.

The **term of apprenticeship** is four years (four 12-month periods) that include a minimum of 1,500 hours of on-the-job training and eight weeks of technical training each year. High school students can become apprentices and gain credits toward apprenticeship training and a high school diploma at the same time through the Registered Apprenticeship Program (RAP).

Applicants who have related training or work experience may be eligible for credit or certification.

Electronic technician apprentices may attempt the Interprovincial Exam in the final period of their apprenticeship training and, if successful, are granted a Red Seal (which is recognized in most parts of Canada).

Technical training is arranged by Alberta Apprenticeship and Industry Training and is currently offered offered at the Northern Alberta Institute of Technology (NAIT) in Edmonton.

Outside the apprenticeship program, the following post-secondary institutions offer related training:

- **DeVry Institute of Technology**, a private vocational school in Calgary, offers a a 45-week Electronics and Network Technology diploma program, a 75-week Electronics Systems Technology program and a four year Electronics Engineering Technology degree program. The entrance requirement is a high school diploma or equivalent.
- The **Northern Alberta Institute of Technology (NAIT)** in Edmonton offers a one year Electronic Service Technician certificate program and a two year Electronics Engineering Technology diploma. The entrance requirement for the Electronic Service Technician program is a high school diploma or equivalent with English 30 or 33 and Pure Math 30 or Applied Math 30. The entrance requirement for the Electronics Engineering Technology diploma program is a high school diploma or equivalent with English 30 or 33, one of Physics 30, Chemistry 30 or Science 30 and Pure Math 30 or successful completion of Transitional Mathematics 101 or at least 65 per cent in Algebra 35.
- The **Southern Alberta Institute of Technology (SAIT)** in Calgary offers a two year Electronics Engineering Technology diploma program. The entrance requirement is an Alberta high school diploma or equivalent with Pure Math 30 or Math 30, English 30 or 33, English Language Arts 30-1 or 30-2 and a minimum 20 level science (Physics preferred).

Pre-employment programs for prospective apprentices and continuing education programs for journeymen may be offered on an as needed basis by the institution(s) listed above or other schools.

For current information about programs and mature student admission policies, please check post-secondary calendars or websites.

Other Requirements

The Alberta Society of Engineering Technologists grants the designation Certified Technician (C.Tech.) to graduate technicians who meet the requirements for education and have two years of successful work experience in industry.

Employment and Advancement

Electronic technicians are employed by independent repair shops and large organizations that use communications equipment.

Experienced electronic technicians may set up their own businesses or advance to supervisory positions. Alberta certified journeyman electronic technicians who have the supervisory or management skills required by industry may apply for an Achievement in Business Competencies Blue Seal by contacting Alberta Apprenticeship and Industry Training.

The employment outlook for radio and television repairers employed in the **Retail Trade** industry will continue to be limited by the introduction of products requiring less servicing. Most of the employment growth in this occupation will be created by the increasing use of computers in manufacturing and industry. Competition for training positions is keen and job applicants who already have training or experience in electronics will have an advantage.

Salary

Apprentice electronic technicians earn at least 50 per cent of the journeyman wage rate in their place of employment in the first year, 60 per cent in the second, 70 per cent in the third and 80 per cent in the fourth. According to the Alberta Provincial Apprenticeship Committee for this trade, journeyman wage rates vary, but generally range from **$12 to $22 an hour plus benefits** (2004 estimate). Many shops pay electronic technicians on a commission rate (generally 40 per cent to 60 per cent of the total labour billing) instead of paying per hourly rate.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Electronic Service Technicians (Household and Business Equipment) occupational group working part-time or full-time earned from **$14,200 to $81,100 a year.** The average salary was **$44,200 a year.**

Other Sources of Information

Alberta Apprenticeship and Industry Training website: www.tradesecrets.org

Post-secondary institution calendars or websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Related Occupational Profiles

Appliance Service Technician
Automobile Accessories Installer
Electronics Engineering Technologist
Office Equipment Technician
Vending Machine Repairer

Related High School Subjects

Design Studies; Electro-Technologies; Language Arts; Mathematics; Physical Education; and Science (Physics)

Related Post-Secondary Fields of Study

Trades, Industrial and Related Training

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Electronics Assemblers and Fabricators

Produced SEPTEMBER 2003

Electronics assemblers and fabricators mount, secure, interconnect and adjust parts and components to assemble and fabricate electronic equipment.

NOC Number(s): 9483.1
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: **O M i**

Duties

Electronics assemblers and fabricators perform specific tasks required in manufacturing electronic products such as computer circuit boards, medical equipment, transmitters and receivers, automotive equipment and measuring devices. These tasks generally require working to very precise specifications.

Electronics assemblers put together electronic components, subassemblies, products or systems. They may:

- solder and manually place components such as resistors, diodes, transistors, capacitors, integrated circuits, wires and other electronic parts to designated locations on printed circuit boards
- assemble microcircuits requiring fine hand assembly
- install, mount, fasten, align and adjust parts, components, wiring and harnesses to subassemblies and assemblies using hand and small power tools
- operate automatic and semi-automatic machines to position, solder and clean components on printed circuit boards
- assemble mechanical parts into large enclosures, frames or shelves.

Electronics fabricators set up, operate and/or monitor process equipment including automatic and semi-automatic machines which fabricate, solder, clean, seal and stamp electronic components.

Working Conditions

Most electronics assemblers and fabricators work in assembly plants. Shift work may be required.

Where electronics assemblers also do mechanical assembly, some heavy lifting is required.

Personal Characteristics

Electronics assemblers and fabricators need the ability to:

- perform routine tasks with care and precision
- work at a steady, rapid pace
- distinguish colours used to identify wires and components
- learn new tasks reasonably quickly
- get along well with fellow employees in assembly plants.

They should enjoy operating equipment and performing tasks requiring precision, and having clear rules and organized methods for their work.

Educational Requirements

There are **no standard education requirements**; however, some employers prefer to hire high school graduates. A basic knowledge of electronics or experience in soldering and component identification are definite assets.

Courses in basic electronics are offered by high schools, private vocational schools, school board Continuing Education departments, technical institutes and colleges. Many courses are offered evenings and weekends. Course dates, times and locations are advertised in local newspapers.

Electronics assemblers and fabricators are **trained on the job**. Training periods range from one week to six months, depending on the complexity of the work and the worker's interest in learning more complicated tasks.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

(section revised JANUARY 2006)

Electronics assemblers and fabricators are employed by electronics manufacturers. Plants are usually located in or near major urban centres where there is ready access to parts, courier services and customers. Employees are often hired on a temporary basis to cover peak production periods and may be laid off when production requirements decrease. Some assemblers and fabricators are self-employed and work on a piece-work basis.

Experienced electronics assemblers and fabricators may advance to electronics inspector and electronics tester positions. Electronics inspectors check electronic components and assemblies for production faults and keep records of inspection results. Electronics testers use testing equipment to locate circuit and wiring faults and component defects, repair assemblies, compare test results to specifications and prepare reports.

Promotion to electronics tester positions may require some post-secondary training in basic electronic theory, testing techniques and testing equipment. Without further education, advancement opportunities beyond electronics testing and assembly line supervisory positions are limited.

Electronics assemblers and fabricators are part of the larger National Occupational Classification 9483: Electronics Assemblers, Fabricators, Inspectors and Testers. In Alberta, over 75 per cent of people employed in this classification work in the **Other Manufacturing** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Other Manufacturing industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 1,950 Albertans are employed in the Electronics Assemblers, Fabricators, Inspectors and Testers occupational group which is expected to grow 2.1 to 3.1 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 40 to 70 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since electronics assemblers and fabricators form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for electronics assemblers and fabricators.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Wages vary depending on the level of skill required, and the method of payment. Some assemblers are paid an hourly rate; others work on a piece work basis.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Electronics Assemblers, Fabricators, Inspectors and Testers occupational group working part-time or full-time earned from **$18,700 to $60,500 a year.** The average salary was **$26,200 a year.**

Related Occupational Profiles

Computer Service Technician
Optical Technician

Related High School Subjects

Electro-Technologies

Related Post-Secondary Fields of Study

Trades, Industrial and Related Training

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Electronics Engineering Technologist

Produced SEPTEMBER 2004

Electronics engineering technologists apply the practical and theoretical principles of electronics to the development of electronic-based circuits, and the operation and servicing of electronic equipment and systems.

NOC Number(s): 2241.1
Minimum Education: 2 years post-secondary education/training
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: **O I M**

Duties

Although there are many electronics disciplines, technologists usually specialize in one of the following areas:

- systems management
- electronic devices/systems design and manufacture
- technical sales and product representation
- research and development
- electronic systems/equipment installation, maintenance and repair.

In general, electronics engineering technologists:

- perform the technical functions involved in assembling, installing, repairing, maintaining, calibrating, prototyping and modifying electronic circuitry, components and systems
- assist in the production and quality control of electronic equipment and products
- assemble circuitry for electronic systems according to engineering instructions and technical manuals
- troubleshoot electronic instruments, equipment and systems using electronic test equipment
- replace defective components and parts using hand tools, precision instruments and other appropriate industrial maintenance procedures
- build prototypes (models) from rough sketches or plans
- perform acceptance and performance tests on newly designed components or systems
- educate users about the proper use of equipment
- consult with users to determine equipment needs and uses
- inspect newly installed equipment to adjust or correct any operating problems
- write software programs for microprocessors and computers
- use computers to plan, schedule and manage work functions
- write technical reports.

Technologists also may be required to prepare sketches, graphs and drawings that describe electronics systems and their characteristics. They work on many types of electronic equipment including:

- analogue and digital communication circuits and systems
- digital networks
- microprocessor controlled equipment and programmable logic controllers
- computers, computer-controlled equipment and computer networks
- radio and television broadcasting equipment
- telephone switching equipment, microwave, satellite and fibre optic communications sytems
- instrumentation (e.g. biomedical, oilfield, environmental)
- electronic sensors, circuits and systems involved with manufacturing processes (including nanofabrication)
- computers and electronic equipment used in the medical, manufacturing, industrial control, telecommunications, aeronautical or military fields.

Working Conditions

Electronics engineering technologists usually work indoors in offices, shops or production departments but may occasionally work outdoors in unsheltered environments. Some short distance travel may be required when installing or servicing equipment. They may be required to lift equipment weighing up to 25 kilograms.

Electronics engineering technologists often are members of teams working on particular projects. The intense concentration required and the pressure of deadlines can be stressful.

Personal Characteristics

Electronics engineering technologists need the following characteristics:

- good oral and written communication skills
- an aptitude for and interest in mathematics and science
- patience and persistence combined with good time management skills
- analytical and technical problem solving skills
- fine motor skills and good eye-hand co-ordination
- good colour vision
- the ability to work with a variety of people in a team
- the ability to work under pressure of deadlines
- a willingness to continuously update their education.

They should enjoy working with tools, equipment, instruments and machinery at tasks requiring precision; analyzing problems and finding innovative solutions; taking a methodical approach to their work and supervising others.

Educational Requirements

The minimum education requirement for electronics engineering technologists is a **related two year diploma of technology**.

- The **DeVry Institute of Technology,** a private vocational school in Calgary, offers a 75 week Electronic Systems Technology program and a four year Electronics Engineering Technology degree program. The entrance requirement for both programs is a high school diploma or equivalent.
- The **Northern Alberta Institute of Technology (NAIT)** in Edmonton offers a two year Electronics Engineering Technology diploma program. The minimum admission requirement is a high school diploma or equivalent with English 30 or 33, Pure Math 30 or Math 30 (or at least 60 per cent in Applied Math 30 or Math 33), and one of Science 30, Physics 30 or Chemistry 30. Normal colour vision is required. Priority will be given to students entering with Pure Math 30. Applicants presenting Applied Math 30 may be required to upgrade.
- The **Southern Alberta Institute of Technology (SAIT)** in Calgary offers a two year Electronics Engineering Technology diploma program. The minimum admission requirement is a high school diploma or equivalent with English 30 or 33, Pure Math 30 and a 20-level science. English 30 and Physics 30 or Science 30 are strongly recommended. Applicants must write placement tests in English and math.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Continuing education programs may be offered on an as needed basis.

Other Requirements

(section revised OCTOBER 2004)

Certification with the Alberta Society of Engineering Technologists (ASET) is voluntary.

Under Alberta's Engineering, Geological and Geophysical Professions Act, Registered Professional Technologists - Engineering must be ASET members to engage in a defined scope of engineering practice as registered by the Association of Professional Engineers, Geologists and Geophysicists of Alberta (APEGGA).

Employment and Advancement

(section revised JANUARY 2006)

Electronics engineering technologists are employed by:

- manufacturers, retailers and users of electronic equipment and components
- companies using computers, biomedical equipment, integrated circuits instrumentation and comunications devices
- energy, communication and industrial automation industries
- research and testing laboratories
- microelectronic and nanofabrication centres
- health care facilities
- environmental monitoring companies
- engineering consulting firms
- the Canadian Armed Forces.

There is an increasing demand for technologists to work in technical sales and customer relations, and to supervise technical personnel. These positions require excellent interpersonal and communication skills.

Electronics engineering technologists are part of the larger National Occupational Classification 2241: Electrical and Electronics Engineering Technologists and Technicians. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Professional and Technical Services**
- **Information, Culture and Recreation**
- **Other Manufacturing**
- **Oil and Gas Extraction**
- **Public Administration**
- **Educational Services**
- **Management, Administrative and Other Support Services**
- **Construction**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 6,500 Albertans are employed in the Electrical and Electronics Engineering Technologists and Technicians occupational group which is expected to grow 2.4 to 3.4 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 150 to 230 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since electronics engineering technologists form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for electronics engineering technologists.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Salaries for electronics engineering technologists vary considerably.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Electrical and Electronics Engineering Technologists occupational group working part-time or full-time earned from **$22,100 to $126,100 a year.** The average salary was **$74,400 a year.**

For more detailed information, see ASET's Annual Salary Surveys.

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

Alberta Society of Engineering Technologists (ASET) website: www.aset.ab.ca

Related Occupational Profiles

Automated Systems Technologist
Avionics Technologist
Biomedical Engineering Technologist
Broadcast Maintenance Technologist
Career and Technology Studies Teacher
Computer Service Technician
Drilling and Service Rig Managers
Electrical Engineer
Electrical Engineering Technologist
Electronic Technician
Engineering Design and Drafting Technologist
Seismic Observer
Telecommunications Engineering Technologist

Related High School Subjects

Design Studies; Electro-Technologies; Information Processing; Language Arts; Mathematics; Physical Education; and Science (Physics)

Related Post-Secondary Fields of Study

Engineering and Science Technologies

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Elementary School Teacher

Produced JANUARY 2006

Elementary school teachers teach and facilitate the learning of children ranging in age from four to 12 years in Kindergarten to Grade 6.

NOC Number(s): 4142
Minimum Education: 4 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **S I D**

Duties

In general, elementary school teachers:

- identify children's individual and collective learning needs
- plan and deliver instruction based on student learning needs and special needs
- provide a stimulating learning environment in which each child can experience growth and develop to potential
- help students learn appropriate knowledge, skills and attitudes
- use various assessment tools to evaluate and communicate student progress
- serve as role models for students.

Elementary classes vary in size and often include students who represent a broad range of abilities, interests and needs. A variety of instructional and assessment strategies are required to maintain student interest and maximize individual learning.

In addition, elementary teachers:

- meet with parents
- meet with other professionals to discuss individual student needs and progress
- organize and direct the work of teacher assistants and parent volunteers
- supervise extra-curricular and after-school activities
- attend meetings, seminars and in-service training sessions
- deal with children's crises such as forgotten lunches, minor scrapes, family emergencies or not being picked up as scheduled.

Most elementary teachers are responsible for a homeroom class of 20 to 33 children and teach most subjects. Some teachers team teach or teach music, second languages or physical education at different grade levels.

Elementary teachers who have specialized in Early Childhood Education are trained to work with children from kindergarten to Grade 3. These programs focus on the development of positive self-concepts in young children and include planning, organizing and providing a wide variety of experiences that foster understanding and use of language through:

- practical experiments, stories, discussions, songs, art, games and other exploratory learning activities
- listening experiences
- individual and group activities and projects.

Most kindergarten teachers in urban areas teach two different groups of children each day (one in the morning, one in the afternoon). In rural areas, kindergarten teachers often work in half-day or alternate full-day programs.

Many schools in Alberta offer language immersion/bilingual programs in Arabic, French, German, Hebrew, Mandarin, Polish, Spanish, Ukrainian, native and other languages. In addition, the number of non-English speaking immigrant children in the province has created a need for English as a Second Language (ESL) teachers. ESL classes are usually taught by elementary teachers who have completed related university course work.

Working Conditions

Teaching is a physically and emotionally demanding occupation. Much of the time teachers are on their feet interacting with children. Maintaining discipline in a classroom is a constant challenge especially when the class includes special needs children who have behavioural disorders.

Personal Characteristics

Elementary school teachers need the following characteristics:

- strong interpersonal and communication skills
- a genuine interest in children and respect for their individuality
- the ability to sense children's individual needs
- the ability to be creative, imaginative, patient, energetic, organized and resourceful
- the ability to establish rapport children and parents
- strong leadership and teamwork skills and a good sense of humour
- a high level of dedication to work which often impacts personal lifestyle choices
- a clear, pleasant speaking voice and the ability to convey confidence
- positive conflict resolution skills and the ability to handle stress well.

They should enjoy finding different ways to solve questions and present information, and organizing and co-ordinating the work of others.

Educational Requirements

In Alberta, the minimum qualification required to teach in an elementary school is four years of post-secondary education leading to a **bachelor of education (B.Ed.) degree**. The following post-secondary institutions offer B.Ed. degree programs.

- **Canadian University College** in Lacombe offers a four year B.Ed. program with a specialization in elementary education. The admission requirement is a high school diploma or equivalent with an average of at least 60 per cent in English Language Arts 30-1 (or English 30), Pure Math 30 and two other 30 level courses, preferably laboratory sciences.
- **Concordia University College of Alberta** in Edmonton offers a two year B.Ed. after-degree program in elementary education. The admission requirement is a bachelor's degree with a grade point average (GPA) of 2.3/4 on the most recently attempted 30 credits. The admission requirement for degree programs is a high school diploma or equivalent with an overall average of at least 60 per cent in English Language Arts 30-1 (or English 30) and four other appropriate 30 level subjects.
- **The King's University College** in Edmonton offers a two year B.Ed. after-degree program in elementary education. The admission requirement is a bachelor's degree with specified courses and a GPA of at least 2.7/4 in the last 60 credits.
- The **University of Alberta** in Edmonton offers B.Ed. degree, joint degree and after-degree programs in elementary education through the Faculty of Education and the Faculte Saint-Jean. Off-campus B.Ed. degree programs can be completed at Blue Quills College, Grande Prairie Regional College, Maskwachees Cultural College, Northern Lakes College and Red Deer College. The admission requirement for the Faculty of Education is a competitive average in one year of pre-professional studies (usually in Arts, Science, Human Ecology or Physical Education) including 24 units of transferable course weight to the student's B.Ed. major. Admission to pre-professional studies programs generally requires a competitive average in English Language Arts 30-1 (or English 30), three 30 level humanities or science subjects, and one other approved 30 level subject. The admission requirement for the Faculte Saint-Jean program is the same except that 30 level French is specifically required.
- The **University of Calgary** offers B.Ed. after-degree and combined degree programs in elementary education. Students take three years in General Studies, Fine Arts, Kinesiology or Science, then transfer to Education for the remaining two years of a five year combined degree program. The admission requirement for General Studies is a high school diploma or equivalent with a competitive average in English Language Arts 30-1 (or English 30), Pure or Applied Math 30 (or Math 31), and three of the following: Biology 30, Chemistry 30, Physics 30, Social Studies 30, Science 30, or one five-credit Grade 12 subject (French 30, 30S or 30N recommended).

- The **University of Lethbridge** offers combined degree and after-degree B.Ed. programs. The admission requirement for the after-degree program is a GPA of at least 2.5/4 in a bachelor's degree program with a major in a school subject. Students are admitted to the Faculty of Education after two or three years of university studies. Admission requirements for combined degree programs depend on the combined degree desired. The basic entrance requirement is an average of at least 65 per cent in English Language Arts 30-1 (or English 30), three 30 level subjects (math or science courses may be required or recommended) and a fifth Grade 12 subject.

Competition for admission to quota programs is often keen. Post-secondary institutions may give preference to applicants who have had previous experience working with children in a leadership capacity. Valuable experience can be obtained from:

- playground supervision
- day care work
- hospital volunteering
- amateur sports coaching
- teacher assistant work
- working with children in organized groups.

Post-secondary institutions throughout the province offer university transfer programs that allow students to apply up to two years of study toward university bachelor's degree programs. It is the student's responsibility to ensure that the courses they choose to take will be accepted for credit at the institution to which they wish to transfer.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Other Requirements

Under Alberta's School Act and Certification of Teachers Regulation, elementary and secondary school teachers must be certified by Alberta Education.

Employment and Advancement

Elementary teachers are employed in public schools, private schools, hospitals and other institutions. To find employment, new graduates may:

- relocate to rural or isolated communities
- work as supply (substitute) teachers.

With experience and additional training, elementary school teachers may advance to positions such as:

- team leader or co-ordinator of a subject area in a large school or school system
- vice-principal, assistant principal or principal
- specialist in a department of education, university or school district.

Elementary school teachers are part of the larger National Occupational Classification 4142: Elementary School and Kindergarten Teachers. In Alberta, people employed in this classification work in the **Educational Services** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Educational Services industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 28,000 Albertans are employed in the Elementary School and Kindergarten Teachers occupational group which is expected to grow 1.3 to 2.3 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 360 to 650 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since elementary school teachers form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for elementary school teachers.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

The Alberta Teachers' Association estimates that about 900 teaching positions will become vacant each year due to retirement alone.

Salary

Salaries vary from one school board to another because wages and benefits are determined by collective agreements between boards and their teachers. Teachers are paid according to a grid system which is based on number of years of training and experience. Administrators such as school principals recieve an additional allowance.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Elementary School and Kindergarten Teachers occupational group working part-time or full-time earned from **$12,400 to $95,100 a year.** The average salary was **$62,200 a year.**

All teachers employed in Alberta's publicly supported schools are members of the Alberta Teachers' Association (A.T.A.) and are automatically included under the Alberta Teachers Pension Plan Act. Collective agreements negotiated by the A.T.A. provide a range of benefits including:

- life and disability insurance
- extended health care coverage
- vision and dental insurance
- professional improvement leave.

Holidays and pensions are specified by provincial legislation. However, teachers often use the summer break period of July and August, as well as Christmas and spring-break holidays, for professional development or for fulfilling additional professional responsibilities.

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Teachers' Association (ATA) website: www.teachers.ab.ca

Related Occupational Profiles

Career and Technology Studies Teacher
Early Childhood Educator
Educational Assistant
Secondary School Teacher
Special Needs Teacher

Related High School Subjects

Communication Technology; Fine Arts; Language Arts; Languages (other than English); Mathematics; Physical Education; Science; and Social Studies

Related Post-Secondary Fields of Study

Education and Library Studies

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Elevator Constructor

Apprenticeship and Industry Training

Produced FEBRUARY 2006

Elevator constructors install, modify, service and repair electric and hydraulic elevators, personnel and man-hoists, moving walkways, stagelifts, escalators and related equipment.

NOC Number(s): 7318
Minimum Education: Apprenticeship Trade - Grade 12
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **O M I**

Duties

Duties vary from one position to another but, in general, elevator constructors:

- read and interpret blueprints to determine the layout of cylinders, electrical connections and other system components
- do preparatory construction work including steel work, wiring and piping
- install doors and frames, guide rails, counterweights, and elevator, escalator and walkway chassis
- connect car frames to counterweights with cables and assemble elevator cars
- wire electronic control system equipment
- test and adjust equipment
- trouble-shoot when mechanical or electrical systems fail and make repairs
- carry out preventative maintenance programs to ensure public safety.

Elevator constructors may specialize in construction, maintenance or repair work.

Working Conditions

Elevator constructors primarily work indoors with the occasional outdoor work. They usually work a 40-hour, five-day week. Maintenance and service personnel may be on 24-hour call for specified periods of time. There is some risk of injury due to heavy equipment, falls and electrical shocks.

Personal Characteristics

Elevator constructors need the following characteristics:

- mechanical aptitude
- the ability to work well in a small crew without direct supervision
- the ability to do detailed and precise work
- the ability to keep up to date with changing technology.

Educational Requirements

To work in Alberta, elevator constructors must be registered apprentices or certified journeymen.

To **register** with **Alberta Apprenticeship and Industry Training**, apprentices must:

- have an Alberta high school diploma (or equivalent) or pass an entrance exam
- find a suitable employer who is willing to hire and train an apprentice. Electronic or mechanical training is a definite asset.

The **term of apprenticeship** is four years (four 12-month periods) that include a minimum of 1,800 hours of on-the-job training each year. Technical (modular) training is required in the second, third and fourth periods. High school students can become apprentices and gain credits toward apprenticeship training and a high school diploma at the same time through the Registered Apprenticeship Program (RAP).

Applicants who have related training or work experience may be eligible for credit or certification.

Technical training in the form of modules is provided by the Canadian Elevator Industry Educational Program (CEIEP). Apprentices may also attend training at an approved training provider (course availability subject to demand).

Pre-employment programs for prospective apprentices and continuing education programs for journeymen may be offered on an as needed basis by the institution(s) listed above or other schools.

Employment and Advancement

Elevator constructors are employed by elevator manufacturers and independent firms that contract to install, service and maintain elevator equipment. They are generally employed in cities where multi-storey buildings are common. Most elevator constructors in Alberta belong to the International Union of Elevator Constructors.

Elevator contructors may advance to supervisory positions. Alberta certified journeyman elevator constructors who have the supervisory or management skills required by industry may apply for an Achievement in Business Competencies Blue Seal by contacting Alberta Apprenticeship and Industry Training.

Elevator constructors are part of the larger National Occupational Classification 7318: Elevator Constructors and Mechanics. In Alberta, most people employed in this classification work in the **Construction** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Construction industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 600 Albertans are employed in the Elevator Constructors and Mechanics occupational group which is expected to grow 1.5 to 2.5 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover. (**Note**: Since elevator constructors form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for elevator constructors.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

According to the Alberta Provincial Apprenticeship Committee for this trade, journeyman wage rates vary, but generally range from **$22 to $32 an hour plus benefits** (2005 estimate).

Other Sources of Information

Alberta Apprenticeship and Industry Training website: www.tradesecrets.org

Alberta Construction Industry "Trade Up!" website: www.careersconstruction.com

Calgary Construction Association website: www.cca.cc

Construction Sector Council website: www.csc-ca.org

Related High School Subjects

Construction Technologies; Electro-Technologies; Fabrication Studies; Language Arts; Mathematics; Mechanics; Physical Education; and Science (Physics)

Related Post-Secondary Fields of Study

Trades, Industrial and Related Training

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Embalmer

Produced NOVEMBER 2005

Embalmers prepare the remains of people who have died for public visitation and burial.

NOC Number(s): 6272.2
Minimum Education: 1 year post-secondary education/training
Employment Outlook: Employment turnover plus below average occupational growth in Alberta
Interests: **M O d**

Duties

Embalmers care for deceased persons with dignity and respect. In general, they:

- embalm human remains to restore, preserve and disinfect them
- perform necessary cosmetology or restorative work to improve appearance
- dress deceased persons and place them in caskets
- maintain records, arrange equipment and assist in the general maintenance of the funeral home.

Embalmers also may supervise funeral attendants or other funeral home staff.

Working Conditions

Embalmers must follow the health precautions and regulations required for personal and public hygiene. Most of their work is done under surgical conditions in a preparation room.

In larger funeral homes, embalmers work normal office hours plus some evening work. In small establishments, they may work longer hours or be required to pick up deceased persons at any hour.

Some heavy lifting (over 25 kilograms) is required.

Personal Characteristics

Embalmers need the following characteristics:

- physical strength and endurance
- good finger and manual dexterity
- emotional stability
- an interest in clinical, scientific and artistic subjects
- a caring attitude toward the deceased and the bereaved.

They should enjoy work with clear rules and organized methods; working with tools, equipment and instruments at tasks which require precision, and finding ways to restore bodies to as natural an appearance as possible.

Educational Requirements

Prospective embalmers should discuss training options with practicing funeral directors or embalmers before enrolling in an education program.

In Alberta, the following institutions offer related post-secondary education programs:

- **Mount Royal College** in Calgary offers a 12 month, full-time program and a two year, part-time (distance) Funeral Director and Embalmer certificate program through the Faculty of Continuing Education and Extension. The entrance requirement for both programs is a high school diploma and Biology 30, or equivalent. Chemistry 30 is strongly recommended.

- The **Western School of Funeral Service** in Red Deer offers:
  - a 10 month Funeral Service Certificate program for people who are not sponsored or employed by funeral homes. The entrance requirement is a high school diploma or equivalent and two letters of character reference.
  - a two year Embalmer's Licensure program and a two year Funeral Director's and Embalmer's Licensure program. Applicants must be at least 18 years of age, have a high school diploma or equivalent, two letters of character reference and be sponsored by a licensed funeral director and embalmer.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Other Requirements

Under Alberta's Funeral Services Act, funeral directors and embalmers must be licensed through the Alberta Funeral Services Regulatory Board (AFSRB). A license is not required to work as a funeral attendant under the supervision of a licensed embalmer or funeral director.

Employment and Advancement

(section revised JANUARY 2006)

Embalmers are employed in funeral homes across the province. Licensed embalmers may train to become funeral directors (for more information, see the Funeral Director profile).

Embalmers are part of the larger National Occupational Classification 6272: Funeral Directors and Embalmers. In Alberta, people employed in this classification work in the **Repair, Maintenance, Personal and Other Services** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Repair, Maintenance, Personal and Other Services industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 550 Albertans are employed in the Funeral Directors and Embalmers occupational group which is expected to grow 0.7 to 1.7 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover. (**Note**: Since embalmers form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for embalmers.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years. However, demand for embalming services is declining because more people are choosing cremation.

Salary

According to the **2005 Alberta Wage and Salary Survey**, Albertans working part-time or full-time in the Funeral Directors and Embalmers occupational group earned **up to $66,100 a year**. The average salary was **$45,900 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Funeral Service Association (AFSA) website: www.afsa.ab.ca

Alberta Funeral Service Regulatory Board (AFSRB) website: www.afsrb.ab.ca

Related Occupational Profiles

Funeral Attendant
Funeral Director

Related High School Subjects

Cosmetology Studies; Language Arts; Physical Education; and Science (Biology; and Chemistry)

Related Post-Secondary Fields of Study

Personal and Food Services

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Emergency Medical Responder

Produced NOVEMBER 2004

Emergency medical responders (EMRs) provide pre-hospital emergency medical care and transportation for the sick and injured.

NOC Number(s): 3234
Minimum Education: High school diploma
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: I M O

Duties

EMRs are the lowest tier of Alberta's three-tiered system of emergency medical services personnel (for more information, see the Emergency Medical Technician - Ambulance and Emergency Medical Technologist - Paramedic occupational profiles).

In general, EMRs may:

- assess the extent of injuries or illness to determine medical treatment
- comfort and reassure patients
- obtain the patient's medical history, if possible
- monitor vital signs
- administer pre-hospital emergency care including cardiopulmonary resuscitation (CPR), oxygen, bandaging, splinting, and assisting in childbirth and the treatment of trauma patients
- use a semi-automated or automatic external defibrillator or bag valve mask resuscitator
- use basic airway management techniques
- transport patients to hospital or other medical facilities for further care
- document and record the nature of injuries and treatment provided
- assist hospital personnel as required
- maintain ambulances, equipment and supplies.

Working Conditions

This work is physically demanding. EMRs are required to lift loads weighing well over 25 kilograms (e.g. patients on stretchers). They must observe safety precautions to avoid injury when working with equipment or exposure to potentially hazardous biological agents.

EMRs work both indoors and outdoors, often in stressful circumstances. They may work full-time, part-time or as volunteers. Those employed full-time or part-time work shifts that including evenings, weekends and holidays.

Personal Characteristics

Emergency medical responders need the following characteristics:

- excellent oral and written communication skills
- strong leadership abilities
- sound decision-making skills
- a strong desire to help those in need
- the ability to remain firm, reassuring and efficient in moments of crisis
- the ability to work independently and as part of a team.

EMRs should enjoy compiling information to assess injuries and illness, having clear rules and organized methods for administering pre-hospital care and operating medical equipment.

Educational Requirements

(section revised MAY 2005)

Emergency Medical Responder training programs are designed for people who want to enter the pre-hospital care industry or who already provide emergency services (e.g. fire fighters, police officers).

In Alberta, EMR programs are offered by a number of public colleges, private schools and other organizations. A current list of approved programs is posted on the **Alberta College of Paramedics** website. In general, applicants must be at least 18 years of age and have obtained a Standard First Aid certificate and CPR certification at the Basic Rescuer Level (C) within the previous year.

EMR training programs may be offered by emergency services organizations when there is sufficient demand. Courses that are open to the public are advertised in brochures and local newspapers.

Other Requirements

Under Alberta's Health Disciplines Act and Emergency Medical Technicians Regulation, only members of the Alberta College of Paramedics (ACP) who are registered as emergency medical responders may call themselves Emergency Medical Responders. Registered members provide health services listed in the Regulation.

Employment and Advancement

(section revised JANUARY 2006)

EMRs may work for municipal, private or industrial ambulance services. Some firefighters are also qualified EMRs (for more information, see the Firefighter occupational profile).

Advancement to the second and third tiers of Alberta's system of emergency medical services requires additional training.

EMRs are part of the larger National Occupational Classification 3234: Ambulance Attendants and Other Paramedical Occupations. In Alberta, over 75 per cent of people employed in this classification work in the **Health Care and Social Assistance** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Health Care and Social Assistance industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 1,650 Albertans are employed in the Ambulance Attendants and Other Paramedical Occupations group which is expected to grow 1.6 to 2.6 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 20 to 50 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since EMRs form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for EMRs.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Salaries for EMRs vary greatly depending on location (e.g. rural or urban setting) and type of employer (e.g. private company, regional health authority). Most EMRs work as unpaid community volunteers.

According to the **2005 Alberta Wage and Salary Survey**, part-time or full-time starting salaries for Albertans working in the Ambulance Attendants and Other Paramedical Occupations group earned from **$14,600 to $39,600 a year.** The average salary was **$53,400 a year**.

For information about current collective agreements in the public and not-for-profit sectors, see the Health Sciences Association of Alberta (HSAA) website.

Other Sources of Information

Alberta College of Paramedics (ACP) website: www.collegeofparamedics.org

Emergency Medical Services Department, City of Calgary website: www.calgaryems.com

Health Sciences Association of Alberta (HSAA) website: www.hsaa.ca

Related Occupational Profiles

Emergency Medical Technician - Ambulance
Emergency Medical Technologist - Paramedic
Firefighter
Police Officer

Related High School Subjects

Community Health; Enterprise and Innovation; Language Arts; Logistics; Physical Education; and Science (Biology; and Chemistry)

Related Post-Secondary Fields of Study

Health Care and Medical Sciences

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Emergency Medical Technician - Ambulance

Produced NOVEMBER 2004

Emergency medical technicians - ambulance (EMT-As) provide pre-hospital emergency medical care at the basic life support level as well as transportation for the sick and injured.

NOC Number(s): 3234
Minimum Education: 1 year post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **I M O**

Duties

EMT-As are the middle tier of Alberta's three-tiered system of emergency medical services personnel (for more information, see the Emergency Medical Responder and Emergency Medical Technologist - Paramedic occupational profiles).

In general, EMT-As may:

- assess the extent of injuries or illness to determine medical treatment
- comfort and reassure patients
- obtain the patient's medical history if possible
- monitor vital signs
- administer pre-hospital emergency care such as cardiopulmonary resuscitation (CPR), oxygen, bandaging, splinting and assisting in childbirth
- use spinal immobilization devices and traction splints
- maintain intravenous infusions without medications or blood products
- provide glucose testing and orally administer glucose when needed
- document and record the nature of injuries and treatment provided
- assist hospital personnel as required
- maintain ambulances, equipment and supplies.

Some EMT-As may also supervise and train staff members and students, and assist paramedics (where there are combined services).

Working Conditions

This work is physically demanding. EMT-As are required to lift loads weighing well over 25 kilograms (e.g. patients on stretchers). They must observe safety precautions to avoid injury when working with equipment or exposure to potentially hazardous biological agents.

EMT-As work both indoors and outdoors, often in stressful circumstances. They may work full-time, part-time or as volunteers. Those employed full-time or part-time work eight to twelve hour shifts that include nights, weekends and holidays.

Personal Characteristics

EMT-As need the following characteristics:

- excellent oral and written communication skills
- strong leadership abilities
- sound decision-making skills
- a strong desire to help those in need
- the ability to remain firm, reassuring and efficient in moments of crisis
- the ability to work without supervision and as part of a team.

EMT-As should enjoy compiling information to assess injuries and illness, having clear rules and organized methods for administering pre-hospital care, and operating medical equipment.

Educational Requirements

(section revised MAY 2005)

Applicants for EMT-A positions must be at least 18 years of age and have:

- EMR (Emergency Medical Responder) certification
- valid standard first aid and basic rescuer CPR certification within the previous 12 months
- a high school transcript
- a valid Class 4 or 5 drivers license.

Emergency Medical Technologist - Ambulance training programs are offered by a number of public colleges, private schools and other organizations in Alberta. A current list of programs is posted on the **Alberta College of Paramedics** webiste.

Other Requirements

Under Alberta's Health Disciplines Act and Emergency Medical Technicians Regulation, only members of the Alberta College of Paramedics (ACP) who are registered as emergency medical technicians may call themselves Emergency Medical Technicians. Registered members provide health services listed in the Regulation.

Employment and Advancement

(section revised JANUARY 2006)

EMT-As work for ambulance services and related industrial and emergency services. Newly graduated EMT-As usually start their careers in rural settings and, after they have gained experience, may move to larger urban centres.

Experienced EMT-As may take additional training to upgrade their scope of practice. Use of advanced skills must be approved by the Alberta College of Paramedics and the ambulance service in which they are employed.

EMT-As are part of the larger National Occupational Classification 3234: Ambulance Attendants and Other Paramedical Occupations. In Alberta, over 75 per cent of people employed in this classification work in the **Health Care and Social Assistance** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Health Care and Social Assistance industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 1,650 Albertans are employed in the Ambulance Attendants and Other Paramedical Occupations group which is expected to grow 1.6 to 2.6 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 20 to 50 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since EMT-As form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for EMT-As.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Salaries for EMT-As vary greatly depending on location (e.g. rural or urban setting) and type of employer (e.g. private company, municipality, regional health authority).

According to the **2005 Alberta Wage and Salary Survey**, part-time or full-time starting salaries for Albertans working in the Ambulance Attendants and Other Paramedical Occupations group earned from **$14,600 to $39,600 a year.** The average salary was **$53,400 a year**.

For information about current collective agreements in the public and not-for-profit sectors, see the Health Sciences Association of Alberta (HSAA) website.

Other Sources of Information

Alberta College of Paramedics (ACP) website: www.collegeofparamedics.org

Emergency Medical Services Department, City of Calgary website: www.calgaryems.com

Health Sciences Association of Alberta (HSAA) website: www.hsaa.ca

Related Occupational Profiles

Emergency Medical Responder
Emergency Medical Technologist - Paramedic
Firefighter
Police Officer

Related High School Subjects

Community Health; Enterprise and Innovation; Language Arts; Physical Education; and Science (Biology; Chemistry; and Physics)

Related Post-Secondary Fields of Study

Health Care and Medical Sciences

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Emergency Medical Technologist - Paramedic

Produced NOVEMBER 2004

Emergency medical technologist - paramedics (EMT-Ps) provide pre-hospital emergency medical care at the advanced life support level as well as transportation for the sick and injured.

NOC Number(s): 3234
Minimum Education: 2 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **I M O**

Duties

For simplicity, emergency medical technologist - paramedics are called paramedics throughout this profile. They are the top tier of Alberta's three-tiered system of emergency medical services personnel (for more information, see the Emergency Medical Responder and Emergency Medical Technician - Ambulance occupational profiles).

In general, paramedics:

- assess the extent of injuries or illness to determine medical treatment
- comfort and reassure patients
- obtain the patient's medical history if possible
- monitor vital signs
- administer standard pre-hospital emergency care such as cardiopulmonary resuscitation (CPR), oxygen, bandaging, splinting, assisting in childbirth and immobilization of victims
- administer advanced pre-hospital emergency care including maintaining airways with intubation and surgical airways, administering drugs, providing manual cardiac defibrillation and external pacing, monitoring and maintaining blood and blood product transfusions, suturing minor soft tissue injuries, and urinary catheterization
- operate sophisticated equipment in advanced life-support ambulances, medevac aircraft or other advanced life-support environments
- document and record the nature of injuries and treatment provided
- assist hospital personnel as required
- maintain ambulances, equipment and supplies.

Working Conditions

This work is physically demanding. Paramedics are required to lift heavy loads (e.g. patients on stretchers). They must observe safety precautions to avoid injury when working with equipment or exposure to potentially hazardous biological agents.

Paramedics work both indoors and outdoors, often in stressful circumstances. They work eight to twelve hour shifts that include evenings, weekends and holidays. Some paramedics work part-time.

Personal Characteristics

Paramedics need the following characteristics:

- manual dexterity
- excellent oral and written communication skills
- strong leadership abilities
- sound decision-making skills
- a strong desire to help those in need
- the ability to remain firm, reassuring and efficient in moments of crisis.

Paramedics should enjoy compiling information to assess injuries and illness, having clear rules and organized methods for administering pre-hospital care and operating medical equipment.

Educational Requirements

(section revised MAY 2005)

Applicants for paramedic positions must be registered as an EMT-A (emergency medical technician - ambulance) and have a high school diploma with English 30 or 33, Biology 30 or Science 30 and Math 20 or 23 (or equivalent).

Emergency Medical Technologist - Paramedic training programs are offered by a number of public colleges, private schools and other organizations in Alberta. A current list of programs is posted on the **Alberta College of Paramedics** website.

Other Requirements

Under Alberta's Health Disciplines Act and Emergency Medical Technicians Regulation, only members of the Alberta College of Paramedics (ACP) who are registered as emergency medical technologist - paramedics may call themselves Emergency Medical Technologist - Paramedics. Registered members provide health services listed in the Regulation.

Employment and Advancement

(section revised JANUARY 2006)

Paramedics are employed by public and private ambulance services. Industries such as the oil and gas industry may employ paramedics to provide emergency medical aid on large job sites.

Advancement opportunities in this occupation are limited. With further education, paramedics may move into related health care occupations.

Paramedics are part of the larger National Occupational Classification 3234: Ambulance Attendants and Other Paramedical Occupations. In Alberta, over 75 per cent of people employed in this classification work in the **Health Care and Social Assistance** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Health Care and Social Assistance industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 1,650 Albertans are employed in the Ambulance Attendants and Other Paramedical Occupations group which is expected to grow 1.6 to 2.6 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 20 to 50 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since paramedics form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for paramedics.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Salaries for EMT-Ps vary depending on location (e.g. rural or urban setting) and type of employer (e.g. private company, municipality, regional health authority).

According to the **2005 Alberta Wage and Salary Survey**, part-time or full-time starting salaries for Albertans working in the Ambulance Attendants and Other Paramedical Occupations group earned from **$14,600 to $39,600 a year.** The average salary was **$53,400 a year**.

For information about current collective agreements in the public and not-for-profit sectors, see the Health Sciences Association of Alberta (HSAA) website.

Other Sources of Information

Alberta College of Paramedics (ACP) website: www.collegeofparamedics.org

Emergency Medical Services Department, City of Calgary website: www.calgaryems.com

Health Sciences Association of Alberta (HSAA) website: www.hsaa.ca

Related Occupational Profiles

Emergency Medical Responder
Emergency Medical Technician - Ambulance
Firefighter
Police Officer

Related High School Subjects

Community Health; Enterprise and Innovation; Language Arts; Mathematics; Physical Education; and Science (Biology; Chemistry; and Physics)

Related Post-Secondary Fields of Study

Health Care and Medical Sciences

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Engineering Design and Drafting Technologist

Produced AUGUST 2005

Engineering design and drafting technologists develop engineering designs and drawings from preliminary concepts and specifications, and prepare technical reports, construction specifications, cost/materials estimates and contract/tender documents.

NOC Number(s): 2253.1
Minimum Education: 2 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **M I O**

Duties

Engineering design and drafting technologists usually work as part of a team of engineers and other professionals. They use computer-aided design (CAD) applications, scientific calculators and other equipment to prepare:

- engineering plans
- flow diagrams and schematics
- layouts
- specifications
- maps
- detailed construction or assembly drawings.

This involves using prescribed methods of design and applying industry standards, codes and regulations.

Engineering design and drafting technologists also are involved in related activities such as:

- estimating project materials and costs
- administering contracts
- preparing and interpreting specifications
- writing reports
- supervising the work of technicians.

Specific duties and responsibilities vary depending on the field in which engineering design and drafting technologists work. For example, they may work in:

- civil engineering
- urban and regional planning
- industrial control and automation
- process design
- machine design
- pressure vessel design
- piping design
- electrical design
- heating, ventilation and air conditioning (HVAC) design.

Working Conditions

Engineering design and drafting technologists usually work in office environments. They generally work standard office hours although overtime occasionally may be required to meet deadlines.

Senior technologists also may be involved in field and site work, and project supervision.

Personal Characteristics

Engineering design and drafting technologists need the following characteristics:

- the ability to pay close attention to detail and be precise and accurate
- good eye-hand co-ordination and manual dexterity
- the ability to visualize three-dimensional objects from two-dimensional drawings and visualize the relationships between parts in machinery and systems
- the ability to communicate design ideas and solutions clearly and concisely orally and in writing
- aptitude for mathematics and physics
- good problem solving abilities.

They should enjoy taking a methodical approach to their work, analyzing data and finding innovative solutions to problems, and working with equipment and instruments at tasks that require precision.

Educational Requirements

(section revised DECEMBER 2005)

The minimum educational requirement is a **related two year technical diploma or a university degree**. For information about diploma programs in specific fields, see the Avionics Technologist, Civil Engineering Technologist, Electrical Engineering Technologist, Electronics Engineering Technologist, Geomatics/Surveying Technologist, Industrial Designer, Mapping Technologist, Mechanical Engineering Technologist, and Urban, Regional and Park Planners occupational profiles.

In Alberta, the following institutions offer two year Engineering Design and Drafting diploma programs:

- **Lethbridge Community College**. Applicants are required to have a minimum 50 per cent in Pure Math 30 or a minimum of 65 per cent in Applied Math 30, 50 per cent in Physics 20 or 50 per cent in Science 30, 60 per cent in English Language Arts 30-2 or English Language Arts 30-1, and a basic understanding of computer technology.
- **Northern Alberta Institute of Technology (NAIT)** in Edmonton. The minimum admission requirement is a high school diploma or equivalent with Grade 12 English, Pure Math 30 (or equivalent), and one of: Science 30, Physics 30 (preferred) or Chemistry 30. Students presenting Applied Math 30 may be required to upgrade. This program is accredited nationally. Part of this program is available through Continuing Education.
- **Southern Alberta Institute of Technology (SAIT)** in Calgary. The minimum admission requirement is a high school diploma or equivalent with English Language Arts 30-1 or English 30, Pure Math 30 (or Math 30), and Science 30 or Physics 20. This program is accredited nationally.

Continuing education programs are often offered on an as needed basis.

For current information about programs and mature student admission policies, please check post-secondary calendars or websites.

Other Requirements

Certification with the Alberta Society of Engineering Technologists (ASET) is voluntary.

Under Alberta's Engineering, Geological and Geophysical Professions Act, Registered Professional Technologists - Engineering must be ASET members to engage in a defined scope of engineering practice as registered by the Association of Professional Engineers, Geologists and Geophysicists of Alberta (APEGGA).

Employment and Advancement

(section revised JANUARY 2006)

Engineering design and drafting technologists are employed by:

- private machine design firms
- engineering consulting firms
- municipal, provincial and federal government departments
- manufacturing and assembly companies
- companies in the petrochemical, food processing, pulp and paper and energy industries
- electronic manufacturing companies
- construction and concrete precast companies.

Experienced technologists may advance to supervisory and management positions, or establish their own design and drafting companies. There are international employment opportunities with engineering consulting firms operating in international markets.

Engineering design and drafting technologists are part of the larger National Occupational Classification 2253: Drafting Technologists and Technicians. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Professional and Technical Services**
- **Metals, Metal Fabrication and Machinery Manufacturing**
- **Construction**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 4,150 Albertans are employed in the Drafting Technologists and Technicians occupational group which is expected to grow 1.8 to 2.8 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 70 to 120 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since engineering design and drafting technologists form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for technologists.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Drafting Technologists and Technicians occupational group working part-time or full-time earned from **$16,600 to $150,100 a year.** The average salary was **$54,600 a year.**

For more detailed information, see ASET's Annual Salary Surveys.

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Society of Engineering Technologists (ASET) website: www.aset.ab.ca

Construction Sector Council website: www.csc-ca.org

Related Occupational Profiles

Architectural Technologist
Avionics Technologist
Career and Technology Studies Teacher
Civil Engineering Technologist
Drafting Technician
Electrical Engineering Technologist
Electronics Engineering Technologist
Geomatics/Surveying Technologist
Industrial Designer
Mapping Technologist
Mechanical Engineering Technologist
Steel Detailer
Urban, Regional and Park Planners

Related High School Subjects

Construction Technologies; Design Studies; Electro-Technologies; Energy and Mines; Fabrication Studies; Information Processing; Language Arts; Mathematics; Mechanics; and Science (Physics)

Related Post-Secondary Fields of Study

Engineering and Science Technologies

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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English as a Second Language Teacher - Adults

Produced NOVEMBER 2005

English as a second language (ESL) teachers provide English language and lifeskills instruction to immigrants, international students and others whose first language is not English.

NOC Number(s): 4131
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **I D S**

Duties

The main objective of ESL instruction is to develop the second language proficiency of new immigrants and international students to the point where they can participate effectively in an English-speaking environment. Traditionally, ESL programs have been designed to improve the following skills:

- listening comprehension
- reading comprehension
- pronunciation and intonation
- oral fluency
- writing and composition
- grammar and vocabulary.

Beginning ESL courses generally focus on topics that help newcomers participate in their communities or help overseas students begin to develop basic English proficiency. For example, themes for new immigrants may include:

- renting accommodation
- using public transportation
- banking and shopping
- using telephones
- health or medical care
- travel
- making friends
- citizenship education.

Cultural orientation as well as language instruction is provided to help students adjust to Canadian life as quickly and successfully as possible. Field trips (to banks, grocery stores, shopping malls, cultural and job sites), guest speakers and research projects help immigrants learn about their new country and share aspects of their own culture and country.

Intermediate and advanced level classes generally focus on improving fluency and correctness in English, and providing transitional support for those wishing to go on to further training or educational opportunities. International students often plan to return to their own countries but expect to use English for personal development, to complement studies in their home countries or for business and commerce.

Some ESL classes include an employment component with topics such as interview strategies, work vocabulary and workplace communication strategies. Some ESL classes are designed specifically to help people prepare for work in particular types of workplaces or occupations, or to prepare for further education.

Working Conditions

Classroom facilities vary greatly. Classes may be taught:

- in academic environments (public schools, language centres, post-secondary institutions, private institutes)
- in community facilities (community centres, churches, temples, synagogues)
- at jobsites (factories, hospitals, hotels, offices).

Class sizes vary from one-on-one tutoring situations to academic classes of 20 or more students.

Personal Characteristics

ESL teachers need the following characteristics:

- excellent communication skills
- an interest in language
- imagination, energy, creativity, patience, enthusiasm, commitment and adaptability
- a sense of humour
- the ability to work well in a multicultural environment and demonstrate respect for other values and cultures
- the ability to create an environment in which students feel comfortable and will participate
- the ability to make classes relevant to the needs and interests of diverse groups.

They should enjoy co-ordinating information and preparing teaching materials, supervising and evaluating student progress, and helping others.

Educational Requirements

(section revised JANUARY 2006)

No consistent academic requirement has been established for teachers of adult ESL classes. Each employer sets its own hiring policies, requirements and standards. Consequently, required qualifications vary greatly. However, many employers prefer to hire applicants who have a bachelor's degree and accreditation from **Alberta Teachers of English as a Second Language (ATESL)** or **TESL Canada (Teaching English as a Second Language in Canada)**.

It is not necessary to be fluent in another language to teach adult ESL, although learning a second language does provide insight into the language learning process.

Work-related expertise is required to teach courses that are designed to prepare people for work in particular types of workplaces or occupations.

Accreditation requirements for ATESL members include:

- a bachelor's degree
- a diploma program in ESL instruction which includes at least 250 hours of course work
- 250 hours of classroom ESL teaching experience.

Candidates for ATESL accredition who do not have these qualifications may be considered on an individual basis.

Accreditation requirements for TESL Canada members include a university degree and instruction in methodology and theory, a supervised adult ESL classroom practicum and a minimum number of hours of teaching experience:

- Professional Standard I requires a bachelor's degree, 100 hours of methodology and theory, 20 hours practicum and 1,000 hours of teaching experience.
- Professional Standard II requires a bachelor's degree, 250 hours of methodology and theory, 20 hours of practicum and 1,500 hours of teaching experience.
- Professional Standard III requires a master's degree in applied linguistics or TESOL and 20 hours practicum, or a Professional Standard I, master's degree in a related field and 2,000 hours of teaching experience.

Professional Standard I is entry level. Employment in Canada often requires Professional Level II.

Both ATESL and TESL Canada offer interim accreditation to recent graduates of ESL training programs which can become permanent when the required hours of teaching experience have been reached.

School boards and most post-secondary institutions require a Bachelor of Education (B.Ed.) degree or teacher's certificate with a specialization in teaching English as a second language (TESL). Some institutions require a graduate diploma or Master's degree in TESL or applied linguistics. For information about B.Ed. degree programs, see the Elementary School Teacher and Secondary School Teacher occupational profiles.

In Alberta, the following institutions offer training programs that may lead to ATESL or TESL Canada accreditation:

- The **University of Alberta** in Edmonton offers an eight-course Teaching English as a Second Language diploma program and a course-based Master of Education (M.Ed.) degree program. The entrance requirement for both programs is a bachelor's degree. Applicants for the diploma program must have completed Linguistics 101.
- The **University of Calgary** offers a four course Teaching English as a Second Language certificate, an eight course diploma program, and a course-based M.Ed. degree program. The entrance requirement is a bachelor's degree with a grade point average (GPA) of at least 3.0/4 including Linguistics 201 and 203 or Linguistics 205 and 207.

The above diploma programs meet requirements for TESL Canada Professional Standard II and the master's degree programs meet requirements for Professional Standard III.

TESL Canada also accredits graduates of the ACE TESOL (Teaching English as a Second Language) certificate program offered at **Mount Royal College** in Calgary. This program meets Professional Standard I requirements. Applicants must be at least 18 years of age.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Other private and public post-secondary institutions may offer short training courses for people planning to teach English as a second language overseas.

Employment and Advancement

(section revised JANUARY 2006)

Adult ESL classes are taught in:

- universities
- colleges
- private schools
- community centres
- churches, synagogues and temples
- agencies and organizations serving immigrants.

There are few permanent teaching positions available in this occupation. For most ESL teachers, work tends to be on a short-term contract basis or part-time.

ESL teachers are part of the larger National Occupational Classification 4131: College and Other Vocational Instructors. In Alberta, over 75 per cent of people employed in this classification work in the **Educational Services** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Educational Services industry)
- **location** in Alberta
- changes in government policies
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 11,150 Albertans are employed in the College and Other Vocational Instructors occupational group which is expected to grow 1.6 to 2.6 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 170 to 290 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since ESL teachers form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for ESL teachers.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Hourly wages for teaching adult ESL courses range from **$15 to $40 an hour** in the private sector and **$30 to $50 an hour** in publicly funded institutions **(2005 estimates).** However, many teachers are only paid for actual classroom teaching time (contact hours) and not for the substantial amount of time they spend preparing. Some teachers are hired on short-term/sessional contracts; others have permanent positions with benefits and a negotiated pay grid.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the College and Other Vocational Instructors occupational group working part-time or full-time earned from **$13,600 to $76,000 a year.** The average salary was **$48,200 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Teachers of English as a Second Language (ATESL) website: www.atesl.ca

TESL Canada (Teaching English as a Second Language in Canada) website: www.tesl.ca

Teachers of English to Speakers of Other Languages (TESOL) website: www.tesol.org

Related Occupational Profiles

College, Technical or Vocational Instructor
Interpreter
Private Trainer/Facilitator
Secondary School Teacher

Related High School Subjects

Communication Technology; Language Arts; Languages (other than English); Mathematics; Physical Education; Science; and Social Studies

Related Post-Secondary Fields of Study

Education and Library Studies; and Humanities and Languages

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Entomologist

Produced SEPTEMBER 2005

Entomologists study the classification, life cycle and habits of insects and related life forms, and plan and implement insect surveys and pest management programs.

NOC Number(s): 2121.1
Minimum Education: 4 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: I O D

Duties

Entomologists investigate the biology, roles and management of:

- insect pests
- beneficial insects such as plant pollinators, insect parasites and insect predators
- other insects and arthropods (e.g. spiders and mites).

Duties and responsibilities vary from one position to another but, in general, entomologists:

- study insect physiology, distribution and habitat, and recommend methods of preventing the importation and spread of harmful insects
- investigate and evaluate the role of insect pests in forests, agriculture, human health and the environment
- study the evolution of insects and classify them using molecular and other techniques
- discover and describe new species of insects
- monitor insect biodiversity as part of ongoing efforts to preserve ecological integrity in natural landscapes
- conduct research into the impact and control of insect pest problems
- develop biological methods of controlling harmful insects and weeds (e.g. using pathogens, predators, parasites or genetic methods) and and implement pest management programs
- conduct field and laboratory tests of pesticides to evaluate their effect on different species of insects under different conditions
- preserve and maintain museum collections
- prepare and provide information to help the public identify insects and other anthropods
- co-ordinate public awareness and education programs.

Entomologists usually specialize in particular fields of study such as applied agriculture and forest entomology, apiculture (bee culture), classification and evolution, insect ecology, insect physiology or insecticide toxicology. They often work with other scientists on joint projects such as developing crops resistant to insects, or containing animal and plant diseases caused by insects transmitting infectious organisms (e.g. mosquitoes spreading West Nile Virus, bark beetles spreading Dutch elm disease).

Working Conditions

Entomologists may work more than a standard 40 hour week particularly when involved in research studies. They work indoors conducting experiments in laboratories, greenhouses, controlled environment chambers and museums, and outdoors conducting field research. The may spend considerable time on data preparation and basic analysis. Field work can be strenuous and may require living in remote locations for extended periods of time. Safety precautions are required to avoid injury when handling poisonous or allergenic insects and toxic chemicals.

Personal Characteristics

Entomologists need the following characteristics:

- a keen interest in invertebrate biology
- the intellect, curiosity, creativity, patience and perseverance required to pursue answers to complex research

questions
- the ability to work well independently and as part of a team
- the ability to communicate effectively with their colleagues and the general public.

They should enjoy synthesizing information to conduct studies and prepare reports, using instruments and equipment to perform tasks requiring precision and supervising research projects.

Educational Requirements

The minimum academic requirement is a **four year bachelor's degree** in the biological sciences or agriculture. Research positions in universities, government and industrial organizations require a graduate degree: a master's degree (M.Sc.) or a doctorate (PhD).

The **University of Alberta** in Edmonton offers a four year Bachelor of Science (B.Sc.) degree program in Biological Sciences with specialization or honours in animal biology, and M.Sc. and PhD degree programs in which research focused on insects may be conducted. The entrance requirement for the B.Sc. degree program is a competitive average (ranging from 65 to 80 per cent) in English Language Arts 30-1 or English 30, Pure Math 30 or Math 30, Biology 30, Chemistry 30 and one other approved 30-level humanities, fine arts or science subject (Physics 30 is recommended). Admission to the honours program requires an 80 per cent average.

Transfer programs and bachelor's degree programs in biological sciences are offered by post-secondary institutions throughout the province. Admission requirements vary depending on the program and the institution, but generally include a high school diploma or equivalent with an average of at least 60 per cent in ELA 30-1 or English 30, Pure Math 30 or Math 30, Biology 30, Chemistry 30 and one other approved 30-level subject (Physics 30 recommended). It is the student's responsibility to ensure that the transfer courses they choose to take will be accepted for credit at the institution to which they wish to transfer.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Other Requirements

Professional Biologist is a protected title under Alberta's Professional and Occupational Associations Registration Act. This means that to call yourself a Professional Biologist, you must be a registered member of the Alberta Society of Professional Biologists (ASPB). You do **not** have to be registered with ASPB if you do not call yourself a Professional Biologist.

Employment and Advancement

(section revised JANUARY 2006)

Entomologists are employed by municipal, provincial and federal governments, post-secondary institutions and museums. Pharmaceutical and chemical manufacturing companies and large pest control companies also hire entomologists to conduct research and demonstrate new products for people in the agriculture, forestry and medical communities. A few entomologists are independent consultants who provide insect identification services, advise clients on insect control or conduct environmental impact assessments.

Graduates of bachelor's degree programs may be hired for technical positions in research programs, or entry level jobs such as forest health survey coordinator, food products inspector, or sales and customer service positions. A PhD is generally required for independent research, administrative work or teaching at the post-secondary level.

Entomologists are part of the larger National Occupational Classification 2121: Biologists and Related Scientists. In Alberta, over 75 per cent of people employed in this classification work in the following industries:
- **Professional and Technical Services**
- **Public Administration**
- **Health Care and Social Assistance**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:
- time of year (for seasonal jobs)
- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)

- **size of the occupation.**

About 1,100 Albertans are employed in the Biologists and Related Scientists occupational group which is expected to grow 1.3 to 2.3 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 10 to 30 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since entomologists form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for entomologists.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Entomologists' salaries vary considerably depending on their qualifications and research responsibilities.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Biologists occupational group working part-time or full-time earned from **$29,400 to $103,200 a year.** The average salary was **$64,800 a year.**

Other Sources of Information

Post-secondary institution calendar or website (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Entomological Society of Alberta website: www.biology.ualberta.ca/courses.hp/esa/esa.htm

Entomological Society of Canada website: www.esc-sec.org

Related Occupational Profiles

Agrologist
Beekeeper
Biologist
Ecologist
Interpretive Naturalist
Microbiologist

Related High School Subjects

Agriculture; Forestry; Language Arts; Mathematics; Science (Biology; and Chemistry); and Wildlife

Related Post-Secondary Fields of Study

Agriculture and Related Technologies; and Sciences

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Environmental Auditor

Produced SEPTEMBER 2005

Environmental auditors assess the environmental performance of operations in business and industry.

NOC Number(s): 2263
Minimum Education: 4 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **M I D**

Duties

Environmental auditors assess the management of operations in all types of businesses to ensure corporate and government standards of environmental control are being met. Their objective is to detect any existing or potential environmental problems in the company's operations, and take appropriate action.

Environmental auditors may conduct compliance audits or management system audits:

- **Compliance audits** assess how well businesses meet standards set out in environmental legislation and guidelines, and internal company guidelines.
- **Management performance audits** measure conformance to management system criteria.

Depending on their areas of specialization, environmental auditors may:

- review the overall operations of the businesses they are assessing
- select and manage an audit team
- gather data using questionnaires and on-site inspections and interviewing
- examine clients' records for appropriate government permits and requirements, safety standards, maintenance, and inventory control measures
- review emergency handling procedures, employee training (for compliance with corporate and government standards), environmental monitoring programs and waste management efforts
- identify alternate clean-up methods, where appropriate
- write final audit reports and discuss findings and recommendations with clients
- make presentations to directors and management
- help businesses develop environmental management plans (policies and procedures).

Working Conditions

Environmental auditors work primarily in offices but also visit manufacturing plants and assess operations outdoors. Inspecting industrial sites and meeting with clients may involve travel away from the office.

Personal Characteristics

Environmental auditors need the following personal characteristics:

- open-minded
- tactful
- observant and perceptive
- adaptable
- persistent
- able to critically analyze information and make logical, timely decisions
- good oral and written communication skills
- able to work independently as well as work effectively with others.

They should enjoy having clear rules and guidelines for their work, analyzing data and finding innovative solutions to problems and directing the work of others.

Educational Requirements

Environmental auditors must be knowledgeable about environmental management methods and techniques, related legislation and regulations, and business and industrial operations. Most have **post-secondary education in scientific or engineering fields** such as biology, chemistry, environmental sciences or environmental engineering. They may have an undergraduate degree in engineering, science, environmental law or environmental studies, or related work experience and a technical diploma specializing in environmental technology, chemical technology or engineering technology. For on-site audits, safety training may be required.

Prior to enrolling in an education program, prospective students should contact associations and employers in this field to investigate education options and employment possibilities. Specific courses are required for accreditation. Environmental auditors who have the authority to sign off audits are generally required to have a related professional designation or university degree.

Post-secondary institutions throughout Alberta offer programs in biology, chemistry, biochemistry, environmental science and related disciplines. The following institutions offer two year diploma programs specifically in environmental science or technology:

- **Keyano College** in Fort McMurray offers a two year Environmental Technology diploma program. The entrance requirement is a high school diploma with Grade 11 math, chemistry and biology.
- **Lakeland College** in Vermilion offers two year diploma programs in Agro-Environmental Technology, Conservation and Vegetation Management Technology, Environmental Conservation and Reclamation, Environmental Protection Technology, and Natural Resources Technology. The entrance requirement for all programs is a high school diploma with English Language Arts 30-1 or English 30 (or 65 per cent in English Language Arts 30-2 or English 33), Math 30 or Pure Math 30 (or 65 per cent in Applied Math 30 or Math 33), Biology 30 and Chemistry 30.
- **Lethbridge Community College** offers a two year Environmental Sciences diploma program with specializations in renewable resource management, and environmental assessment and restoration. The entrance requirement is a high school diploma with English Language Arts 30-1, Biology 20, Chemistry 20 and Applied Math 20, or equivalent. Applicants who do not have at least 70 per cent in ELA 30-1 and Applied Math 20 will be required to complete a computerized placement test. Medicine Hat College also offers the first year of this program.
- **Mount Royal College** in Calgary offers a one year certificate program in Environmental Technology. This program is designed for students who have experience in environmental management or related fields.
- The **Northern Alberta Institute of Technology (NAIT)** in Edmonton offers a two year Biological Sciences Technology diploma program with specializations in environmental sciences and renewable resources. The entrance requirement is a high school diploma with English Language Arts 30-1 or 30-2, Chemistry 30, Biology 30 and Applied or Pure Math 30 (or equivalent).
- **Olds College** offers a two year Land and Water Resources diploma program. The entrance requirement is a high school diploma with Pure or Applied Math 20 (or equivalent) and Chemistry 20, Biology 20 or Science 30.
- The **Southern Alberta Institute of Technology (SAIT)** in Calgary offers two year Environmental Technology diploma program. The entrance requirement is a high school diploma with at least 60 per cent in Pure Math 30 and Chemistry 30, and at least 50 per cent in English Language Arts 30-2 (or equivalent).

The following post-secondary institutions offer degree programs specifically in environmental science:

- **Concordia University College of Alberta** in Edmonton offers three and four year B.Sc. degree programs in environmental science. The entrance requirement is an average of at least 60 per cent in English Language Arts 30-1, Pure Math 30, Chemistry 30 and Biology 30 (or equivalent) and one other appropriate 30-level subject.
- **The King's University College** in Edmonton offers three and four year Bachelor of Arts and B.Sc. degree programs in environmental studies. The entrance requirement is an average of at least 60 per cent in English Language Arts 30-1, Pure Math 30, and one of Biology 30 or Chemistry 30 (both are recommended), and two other approved 30-level courses.
- **Lakeland College** in Vermilion a Bachelor of Applied Environmental Management degree program with a reclamation/remediation stream and a monitoring/environmental protection stream. The entrance requirement is successful completion of a related two year diploma program from a recognized post-secondary institution.
- The **University of Alberta** offers four year degree programs in Environmental and Conservation Sciences (Edmonton), Environmental and Conservation Sciences/Native Studies Combined (Edmonton) and Environmental Science (Camrose). The entrance requirement for these programs is a competitive average of 65 to 80 per cent in English Language Arts 30-1, Pure Math 30, Chemistry 30, Biology 30 and one other Grade 12 subject.

- The **University of Calgary** offers a four year B.Sc. degree program in Environmental Science. The entrance requirement is a high school diploma with a competitive average in English Language Arts 30-1, Pure Math 30 (or equivalent), Chemistry 30, two of the following: Biology 30, Math 31, Physics 30, and one other 30-level subject selected from an approved list. Biology 30 is required for the biological sciences concentration. Students must complete a year of appropriate university studies before being admitted to this program.
- The **University of Lethbridge** offers a four year B.Sc. degree program in Environmental Science. The entrance requirement is an average of at least 65 per cent in English Language Arts 30-1, Biology 30, Chemistry 30, Pure Math 30 (or equivalent) and a fifth Grade 12 subject (Math 31 recommended).

Post-secondary institutions throughout the province offer university transfer programs that allow students to apply up to two years of study toward university bachelor's degree programs. It is the student's responsibility to ensure that the courses they choose to take will be accepted for credit at the institution to which they wish to transfer.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Other Requirements

The Canadian Environmental Auditing Association offers certification programs leading to the following professional designations:

- Certified Environmental Auditor - CEA
- Certified Environmental Sustainable Forest Management Auditor - CEA(SFM)
- Environmental Management System Auditor - EMS(A).

Employment and Advancement

(section revised JANUARY 2006)

Environmental auditors may be employed by or work on a contract basis for:

- engineering and environmental consulting firms
- municipal, provincial and federal government departments
- utility companies
- manufacturing firms
- resource-based companies (agriculture, forestry, mining, oil and gas).

Environmental auditors may advance to supervisory and management positions.

Environmental auditors are part of the larger National Occupational Classification 2263: Inspectors in Public and Environmental Health and Occupational Health and Safety. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Public Administration**
- **Oil and Gas Extraction**
- **Professional and Technical Services**
- **Health Care and Social Assistance**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 2,100 Albertans are employed in the Inspectors in Public and Environmental Health and Occupational Health and Safety occupational group which is expected to grow 1.0 to 2.0 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 20 to 50 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since environmental auditors form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for environmental auditors.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Salaries for environmental auditors vary considerably depending on their qualifications and the responsibilities of the position.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Inspectors in Public and Environmental Health and Occupational Health and Safety occupational group working part-time or full-time earned from **$18,300 to $172,300 a year.** The average salary was **$62,500 a year.** Salaries for environmental auditors who do not have management responsibilities are generally considerably less than the top of the range suggests.

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Canadian Council for Human Resources in the Environment Industry website: www.cchrei.ca

Canadian Environmental Auditing Association website: www.ceaa-acve.ca

Related Occupational Profiles

Agrologist
Biochemist
Biologist
Chemical Engineer
Chemist
Environmental Engineer
Hazardous Waste Management Technologist
Occupational Health and Safety Inspector
Occupational Hygienist
Public Health Inspector

Related High School Subjects

Agriculture; Energy and Mines; Forestry; Language Arts; Management and Marketing; Mathematics; Science (Biology; and Chemistry); and Wildlife

Related Post-Secondary Fields of Study

Engineering and Science Technologies; Engineering, Architecture and Related Studies; Environment, Forestry and Related Studies; and Sciences

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For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Environmental Education Specialist

Produced OCTOBER 2005

Environmental education specialists help create an awareness of the relationship between human activities and the natural environment. They develop and promote strategies that encourage others to make responsible choices regarding consumer decisions, government policies and corporate responsibilities.

NOC Number(s): 4131
Minimum Education: 4 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: I D S

Duties

Environmental education specialists promote taking responsible actions towards the natural environment. They may work in formal education environments or business or industry settings.

Duties and responsibilities vary from one position to another in this evolving field but, in general, environmental education specialists:

- research specific issues such as consumerism, lifestyle choices, resource development, wildlife management, forestry and water quality
- synthesize environmental information from many sources and make it understandable to others through written articles and presentations
- set up internal programs within business and industry to promote responsible attitudes towards the environment
- teach courses and lead workshops and other programs about issues related to living within and caring for the natural environment
- promote the integration of scientific, social and economic factors in environmental decisions
- produce educational materials for schools, youth groups, communities, field programs and libraries
- interpret natural and human history through field study groups and school programs
- educate the public through newspaper and magazine columns, articles, and radio and television commentaries
- integrate environmental education into traditional subject areas such as science, social studies, economics, language arts and mathematics
- participate in meetings and conferences with other people interested in conserving and interpreting the natural environment.

Environmental education specialists may specialize in activities such as the following:

- **environmental consumer education,** providing information about consumer goods and services and describing issues that may influence living and purchasing habits
- **concern for the natural world,** offering nature programs through schools, nature centres, television programs or working with special interest groups such as bird watchers
- **responsible actions,** providing information that empowers people to take action for the environment in the work place, at home and at school
- **issues management,** providing people with perspectives from all sides of an issue so their decisions are based on a solid understanding of the scientific, social and economic impacts of a decision.

Working Conditions

Working conditions vary considerably in this occupation. Environmental education specialists may be required to work some evenings and weekends. They usually work indoors much of the time, although this also varies from one position to another. They may visit outdoor worksites or nature centres as part of their research activities, or conduct outdoor presentations to groups. They attend many meetings outside of their offices and may be required to travel.

Personal Characteristics

Environmental education specialists need the following characteristics:

- strong interpersonal, communication and problem-solving skills
- a strong interest in environmental issues
- the analytical skills required to determine what is valid and reliable information
- writing skills for developing educational guides, and preparing reports and articles
- the ability to work collaboratively with diverse groups of people
- consulting skills to assess needs and develop potential action plans.

They should enjoy helping people and influencing society, and compiling, interpreting and co-ordinating information in innovative ways to prepare teaching materials.

Educational Requirements

Environmental education specialists must be able to present complex issues and scientific data in a way that is understandable to their target audiences. Most have a combination of related post-secondary education and experience. Some employers prefer to hire environmental education specialists who have a bachelor's degree in education or courses in adult education. Volunteer or work experience related to natural resource management or education is a definite asset.

Post-secondary institutions throughout Alberta offer bachelor's degree programs in education, environmental science and related disciplines. For information about degree programs in education or adult education, see the Secondary School Teacher and College, Technical or Vocational Instructor occupational profiles. For information about science degree programs, see other appropriate profiles such as the Biochemist, Botanist, Environmental Auditor, Environmental Engineer, Marine Biologist and Wildlife Biologist profiles.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

(section revised JANUARY 2006)

Environmental education specialists work for the following types of organizations:

- environmental and conservation societies
- naturalist clubs
- outdoor education centres
- heritage and interpretative centres
- school boards
- corporations
- government departments.

Some are self-employed consultants who work on a contract basis for specific projects.

There are many volunteer work opportunities with not-for-profit environmental groups which can provide useful practical experience and important contacts for a job search.

Environmental education specialists are part of the larger National Occupational Classification 4131: College and Other Vocational Instructors. In Alberta, over 75 per cent of people employed in this classification work in the **Educational Services** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Educational Services industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 11,150 Albertans are employed in the College and Other Vocational Instructors occupational group which is expected to grow 1.6 to 2.6 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 170 to 290 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since environmental education specialists form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for environmental education specialists.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the College and Other Vocational Instructors occupational group working part-time or full-time earned from **$13,600 to $76,000 a year.** The average salary was **$48,200 a year.** Environmental education specialists' incomes may be **considerably lower** particularly for those employed by not-for-profit organizations.

Other Sources of Information

Alberta Environment website: www3.gov.ab.ca/env

Canadian Council for Human Resources in the Environment Industry website: www.cchrei.ca

Inside Education website: www.insideeducation.ca

Related Occupational Profiles

Agrologist
Biochemist
Biologist
Chemist
Interpretive Naturalist
Outdoor Sport/Recreation Guide
Private Trainer/Facilitator

Related High School Subjects

Communication Technology; Energy and Mines; Forestry; Language Arts; Mathematics; Science (Biology; and Chemistry); Social Studies; and Wildlife

Related Post-Secondary Fields of Study

Education and Library Studies; Environment, Forestry and Related Studies; and Sciences

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For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Environmental Engineer

Produced JUNE 2004

Environmental engineers design systems, processes and equipment for air, water and soil pollution assessment, prevention and control, solid and hazardous waste management, and the remediation of contaminated sites.

NOC Number(s): 2131
Minimum Education: 4 years post-secondary education/training
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: I O D

Duties

Environmental engineers work closely with facility managers and other professionals. They may be involved in activities ranging from providing expert testimony in an environmental lawsuit to working on environmental assessments, site development, water purification, wastewater treatment, soil remediation, air pollution control or hazardous waste assessment. They may:

- assess industrial sites to determine if they satisfy environmental quality criteria
- advise companies and governments about the clean up necessary to protect the health of human beings and the environment
- design safe solid waste transfer, treatment (e.g. composting) and disposal facilities (e.g. landfills), water supply and treatment systems or wastewater collection and treatment systems
- apply risk-based approaches to develop and recommend procedures to clean up sites that have been contaminated
- determine how to use, protect and treat surface and groundwater effectively and economically
- assess the potential environmental impact of land use projects (e.g. pipelines, gravel pits) and new and existing manufacturing facilities (e.g. chemical plants) on air, water and land
- determine whether industries or municipalities are complying with environmental regulations
- promote integrated solid and hazardous waste management planning programs
- monitor and manage air, water or soil quality
- research and develop methods for minimizing the generation of air, liquid and solid wastes, and treating existing wastes
- design waste treatment and pollution control equipment
- advise industry and government regarding environmental policies and standards
- work with others in their organizations to acquire permits to operate or construct facilities.

Environmental engineers may be called air quality engineers, industrial hygiene engineers, hazardous waste management engineers, solid waste management engineers, site remediation engineers or water and wastewater engineers. Very often, environmental engineers work in co-operation with environmental scientists, planners and hazardous waste management technicians as well as lawyers, bankers and regulators.

To plan and manage systems, environmental engineers use computers and computer simulation models as well as monitoring instruments and techniques. Constant skill and knowledge upgrading is required to keep up to date with new developments in engineering and environmental science.

Working Conditions

Working conditions for environmental engineers vary depending on their duties. They work in offices and outdoors in all kinds of weather at field sites. Sites may smell or be noisy, dirty or cluttered. When working in hazardous conditions, environmental engineers must wear personal protective equipment. Travel for extended periods of time may be required.

Personal Characteristics

Environmental engineers need to be:

- able to think logically and solve problems, sometimes working with limited data
- willing to deal with unidentified hazards
- patient, organized and comfortable with detailed work
- comfortable working with mechanical devices and instruments
- skilled communicators, in person and in writing.

Environmental engineers typically value:

- decision-making opportunities
- working independently
- problem-solving
- variety
- creativity
- helping to promote a safe, clean environment.

Educational Requirements

The minimum education requirement for environmental engineers is **a degree in environmental engineering or a related discipline** (e.g. civil or chemical engineering). They should be able to use advanced technology (e.g. computer models and geographic information systems) in assessing environmental contamination.

In Alberta, the **University of Alberta** in Edmonton and the **University of Calgary** offer B.Sc., M.Eng., M.Sc. and PhD degree programs in engineering disciplines. Some disciplines, such as civil engineering, offer Environmental Engineering specializations at the Bachelor's degree level. The University of Calgary offers a multi-disciplinary graduate level specialization in Environmental Engineering involving four engineering departments: civil, chemical and petrochemical, geomatics, and mechanical and manufacturing (for more information, see the Civil Engineer, Chemical Engineer, Geomatics/Surveying Engineer, Manufacturing Engineer and Mechanical Engineer profiles).

The minimum admission requirement for the bachelor's degree programs in engineering is an overall average of at least 78 or 80 per cent in English 30, Pure Math 30 or equivalent, Math 31, Chemistry 30 and Physics 30.

Both the University of Calgary and the University of Alberta also offer a co-operative education or internship program consisting of periods of academic study alternating with periods of planned work experience in industry. The co-operative engineering degree program usually takes five years to complete.

Post-secondary institutions throughout Alberta offer university transfer programs that allow students to apply up to two years of study toward university bachelor's degree programs. It is the student's responsibility to ensure that the courses they choose to take will be accepted for credit at the institution to which they wish to transfer.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Other Requirements

(section revised OCTOBER 2004)

Under Alberta's Engineering, Geological and Geophysical Professions Act, you must be a registered member of the Association of Professional Engineers, Geologists and Geophysicists of Alberta (APEGGA) to practice as a Professional Engineer. You do **not** have to be registered if you work under the direct supervision of a Professional Engineer and do not call yourself a Professional Engineer.

Employment and Advancement

(section revised JANUARY 2006)

Environmental engineers may work in:

- consulting engineering firms
- municipal, provincial and federal government departments of transportation, energy, public works or the environment
- manufacturing industries
- chemical and petrochemical industries
- waste management companies

- academic and research institutes
- resource industries (e.g. mining, oil and gas).

Some environmental engineers move into related fields such as recycling management or environmental auditing. Those who have M.Sc., M.Eng. or PhD degrees may work in consulting, research or teaching positions at the university or college level.

Environmental engineers are part of the larger National Occupational Classification 2131: Civil Engineers. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Professional and Technical Services**
- **Construction**
- **Oil and Gas Extraction**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 5,950 Albertans are employed in the Civil Engineers occupational group which is expected to grow 2.3 to 3.3 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 130 to 200 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since environmental engineers form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for environmental engineers.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised SEPTEMBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Civil Engineers occupational group working part-time or full-time earned from **$22,900 to $152,900 a year.** The average salary was **$77,400 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Association of Professional Engineers, Geologists and Geophysicists of Alberta (APEGGA) website: www.apegga.org

Related Occupational Profiles

Agricultural Engineer
Chemical Engineer
Chemist
Civil Engineer
Environmental Auditor
Geomatics/Surveying Engineer
Hazardous Waste Management Technologist
Hydrologist
Landscape Architect
Occupational Health and Safety Inspector
Pollution Control Technologist

Related High School Subjects

Agriculture; Design Studies; Energy and Mines; Forestry; Information Processing; Language Arts; Legal Studies; Mathematics; Science (Biology; Chemistry; and Physics); and Wildlife

Related Post-Secondary Fields of Study

Engineering, Architecture and Related Studies

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Ergonomist

Produced JANUARY 2006

Ergonomists study the relationships among people, equipment, and working or living environments, and apply their knowledge to enhance performance, comfort and safety.

NOC Number(s): 4161.1
Minimum Education: 4 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: I D M

Duties

Ergonomics is about ensuring a good fit between people, the tools, equipment and products they use and the environments in which they live, play, travel and work. It is a multi-disciplinary field that encompasses:

- life/biological sciences such as biomechanics, kinesiology and medicine
- behavioural/social sciences such as psychology, sociology and anthropology
- technical sciences such as systems design, mathematical modelling and operations research.

Ergonomists ensure that the design of products, tasks and work methods is compatible with human characteristics and maximizes safety, efficiency and well-being. To accomplish this objective, they may:

- evaluate human/machine systems by observing, measuring and evaluating how people interact with each other, things such as equipment and work spaces, and environments
- develop experimental designs, use data collection instruments and procedures, and make comparisons with criterion measures to study system performance
- collect information by investigating environments and working activities to determine and optimize existing processes and practices
- analyze the demands placed on workers by assessing physical, postural, physiological, cognitive, stress, job and work attitude parameters
- assess physical environments by using measuring instruments, subjective assessments, performance and response measurements, modelling and simulations
- assess the suitability of products and systems in relation to the motor, sensory and cognitive capabilities of operators and users
- design and implement systems by conducting audits and employing creative techniques such as focus groups, participatory design and follow-up groups
- teach workers about body mechanics and work practices
- consult with other specialists concerning design and development problems to gather and integrate data from a variety of scientific and professional points of view
- advise organizations regarding human factors in personnel management and the specification, design, evaluation, operation and maintenance of products and systems.

Working Conditions

Ergonomists work in diverse settings with a wide variety of people: workers, union officials, managers, other professionals, students and the public. They may work in laboratories, industry settings, offices or teaching environments.

Overtime, evening and weekend work may be required to meet project deadlines or to assess systems involving shift workers.

Personal Characteristics

Ergonomists need the following characteristics:

- an interest in and curiosity about how people interact with their environments
- creativity
- the ability to work independently or with a team.

They should enjoy co-ordinating information, developing innovative approaches to problems, consulting with people, taking responsibility for projects, and taking a systematic approach to conducting research.

Educational Requirements

The minimum education requirement is a bachelor's degree in a related discipline. Increasingly, ergonomists have related certification or post-secondary education such as a master's degree in ergonomics, psychology, human kinetics, human factors, biomedical engineering or a related field. Those working in systems design may have a master's degree in industrial engineering (for more information, see the Industrial Engineer occupational profile).

In Alberta, the following universities offer master's degree programs related to ergonomics:

- The **University of Alberta** in Edmonton offers a Master of Science in Physical Therapy degree program with a specialization in ergonomics and a PhD program in Rehabilitation Sciences.
- The **University of Calgary** offers a Master in Environmental Design degree program with specializations in environmental science, industrial design, and planning; and M.Sc. and PhD degree programs in psychology and in perception, aging and cognitive ergonomics.

In general, the entrance requirement for master's degree programs is an acceptable average in the final two years of a related four year bachelor's degree program (e.g. in occupational therapy, kinesiology, engineering or psychology) with course work in the biological and applied sciences and psychology.

Suitable four year bachelor's degree programs are offered by post-secondary institutions throughout the province. The entrance requirements for bachelor's degree programs vary from one program to another and from one institution to another but, in general, specify a minimum acceptable average (ranging from 65 to 80 per cent depending on the program) in English Language Arts 30-1 or English 30 and four other specified Grade 12 subjects such as 30 level science courses, Pure Math 30 or a 30 level language other than English.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Other Requirements

Certification is voluntary in Alberta. Ergonomists may belong to the Association of Canadian Ergonomists and be certified through the Canadian College of Certified Professional Ergonomists. To qualify for certification, applicants must have a bachelor's degree with specified course content or an equivalent combination of education and experience, and meet competency and work experience requirements.

Employment and Advancement

Ergonomists work for:

- government departments concerned with workers compensation, occupational health and safety, transportation and defence
- research councils and institutes
- universities and other educational institutions
- computer and office furniture manufacturers
- manufacturing companies
- large corporations such as utility or telecommunications companies
- private consulting firms.

Self-employed ergonomists may contract their services to a variety of employers.

Advancement opportunities vary depending on the size and nature of the organization and the ergonomist's qualifications.

Ergonomists are part of the larger National Occupational Classification 4161: Natural and Applied Science Policy Researchers, Consultants and Program Officers. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Professional and Technical Services**
- **Public Administration**
- **Oil and Gas Extraction**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

About 1,600 Albertans are employed in the Natural and Applied Science Policy Researchers, Consultants and Program Officers occupational group which is expected to grow 1.7 to 2.7 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 20 to 50 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since ergonomists form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for ergonomists.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Natural and Applied Science Policy Researchers, Consultants, and Program Officers occupational group working part-time or full-time earned from **$17,600 to $116,200 a year.** The average salary was **$61,500 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Association of Canadian Ergonomists website: www.ace-ergocanada.ca

Related Occupational Profiles

Industrial Designer
Industrial Engineer
Kinesiologist
Manufacturing Engineer
Occupational Hygienist
Physiotherapist

Related High School Subjects

Design Studies; Information Processing; Language Arts; Mathematics; and Science (Biology; Chemistry; and Physics)

Related Post-Secondary Fields of Study

Engineering, Architecture and Related Studies; Health Care and Medical Sciences; Physical Education and Recreation; Sciences; and Social Sciences, Law and Religious Studies

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For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Esthetician

Produced DECEMBER 2003

Estheticians provide facial and body treatments designed to enhance the physical appearance of their clients.

NOC Number(s): 6482.1
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus below average occupational growth in Alberta
Interests: **M S O**

Duties

Estheticians work with individual clients. In general, they:

- assess each client's skin condition, appearance and other characteristics
- advise clients about skin care in general and how to care for problem areas in particular
- demonstrate how to clean and care for skin properly
- provide facial and other skin treatments using specialized products and techniques (e.g. peels and masks)
- advise clients and sell skin care products.

They may also:

- advise clients about colours and types of make-up
- teach clients how to apply make-up
- clean, shape and polish fingernails and toenails
- apply artificial nails and nail art
- tint eyelashes and eyebrows
- provide specialized treatments for hands and feet
- remove body and facial hair by applying wax
- provide other specialized services such as aromatherapy, bodywrapping or airbrushing.

When not working directly with clients, estheticians:

- keep their equipment and work stations clean
- keep records of client needs/preferences and services provided
- track inventory and order supplies.

They may also be responsible for booking client appointments.

Working Conditions

Estheticians may work full-time or part-time. Saturday and evening work is often required.

Personal Characteristics

Estheticians need the following characteristics:

- a conscientious and caring attitude
- a good sense of colour
- an interest in skin care and willingness to continue learning about new products and procedures
- the desire to maintain an attractive personal appearance.

They should enjoy:

- taking a methodical approach to compiling information
- serving and assisting people
- using specialized products and techniques.

Educational Requirements

(section revised OCTOBER 2005)

There are **no standard education requirements** for estheticians but most salons and spas require their employees to have esthetics training. High school courses in art, biology, practical chemistry, anatomy, physiology and business methods are definite assets.

In Alberta, the following private vocational schools offer esthetics training programs:

- **Alberta Academy of Aesthetics** in Edmonton
- **Academy of Professional Hair Design** in Red Deer
- **Beauty Tech Esthetic School** in Edmonton
- **European Institute of Esthetics** in Edmonton
- **Eveline Charles Academy** in Edmonton
- **International Academy of Esthetics** in Sherwood Park
- **Marvel College** in Calgary, Edmonton and Red Deer
- **Sultana's Beauty Clinic and School** in Red Deer
- **Training Inc.** in Lethbridge
- **Zeneba Academy of Esthetics** in Calgary.

Program content, length, cost and admission requirements vary. However, in general, entrance requirements include a high school diploma or equivalent, and a medical certificate. For specific admission requirements and information about mature student admission policies, please check institution calendars or websites.

People interested in this occupation should discuss their training options with practicing estheticians and potential employers before enrolling in a program.

Employment and Advancement

(section revised JANUARY 2006)

Estheticians may be employed or work on a contract basis in beauty salons, cosmetology shops, spas, fitness centres or home based businesses.

Advancement opportunities in this occupation are limited. Some estheticians establish independent shops or teach in private vocational colleges. With additional training, estheticians may move into related occupations (for more information, see the Electrologist, Make-up Artist and Massage Therapist occupational profiles).

Estheticians are part of the larger National Occupational Classification 6482: Estheticians, Electrologists and Related Occupations. In Alberta, over 75 per cent of people employed in this classification work in the **Repair, Maintenance, Personal and Other Services** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Repair, Maintenance, Personal and Other Services industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 3,350 Albertans are employed in the Estheticians, Electrologists and Related Occupations group which is expected to grow 0.5 to 1.5 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 10 to 60 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since estheticians form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for estheticians.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Estheticians' earnings vary considerably depending location, services offered and the person's reputation. Rates are usually set for each type of treatment so earnings vary from day to day, depending on the type and number of treatments performed each day.

Estheticians may:

- rent space in a beauty salon and keep their earnings separate from those of the salon
- be employed by a salon and paid a basic salary plus commission
- operate their own shops and pay overhead costs (rent, utilities, etc.) from their earnings
- work from their own homes.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Estheticians, Electrologists and Related Occupations group working part-time or full-time earned from **$11,100 to $45,500 a year.** The average salary was **$19,600 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Related Occupational Profiles

Cosmetician
Electrologist
Hairstylist
Make-Up Artist
Nail Technician

Related High School Subjects

Community Health; Cosmetology Studies; Financial Management; Fine Arts (Visual Arts); Language Arts; and Science (Biology; and Chemistry)

Related Post-Secondary Fields of Study

Personal and Food Services

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Executive Housekeeper

Produced MAY 2003

Executive housekeepers manage the housekeeping and laundry departments in hotels, motels and institutions such as hospitals and schools.

NOC Number(s): 6213
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: M D s

Duties

Executive housekeepers supervise personnel who clean the establishment and may also supervise in-house laundry services, maintenance and repair services, or dry cleaning and valet services.

Duties and responsibilities vary depending on the size and nature of the organization but, in general, executive housekeepers:

- hire and train new personnel in their departments
- schedule work hours and keep employee records
- establish standards of housekeeping quality and safety, and ensure that those standards are maintained
- choose the most suitable cleaning materials for different types of linens, furniture, flooring and other surfaces
- supervise staff and do performance appraisals.

In hospitals and other health care facilities, executive housekeepers are particularly concerned with preventing the spread of infection.

Executive housekeepers may also:

- prepare and manage housekeeping department budgets
- develop in-service housekeeping training programs
- order supplies and furnishings
- maintain an inventory
- make recommendations for painting, repairs, furnishings, relocation of equipment and reallocation of space.

In smaller establishments, executive housekeepers may help housekeeping staff when required.

Working Conditions

Executive housekeepers generally work standard office hours. Other working conditions depend upon the type of institution in which they work (e.g. small nursing home or luxury hotel).

Personal Characteristics

Executive housekeepers need the following characteristics:

- good communication skills
- organizational skills
- the ability to make sound decisions quickly
- excellent leadership and supervisory skills
- a good eye for details
- the desire to do precise work.

They should enjoy taking a methodical approach to co-ordinating information, supervising the work of others and working with people.

Educational Requirements

(section revised OCTOBER 2005)

The specific qualifications required for executive housekeepers vary from one employer to another and depend on the responsibilities of the position. A second language may be an asset.

Some executive housekeepers have worked their way up from cleaning positions. However, most employers prefer to hire high school graduates who have **some related post-secondary education and experience** in administration, human resource management, housekeeping, quality control, chemistry or textiles (seamstress or tailoring skills). Training in health and safety is also required.

There are a wide variety of post-secondary education programs related to this field, ranging from continuing education and distance education courses to two year diploma programs (such as health services administration, or hotel and restaurant administration) to bachelor's degree programs in management. Anyone interested in becoming an executive housekeeper is strongly advised to contact executive housekeepers working in the type of facility that interests them to ask about preferred training.

Business administration and management programs are offered by colleges, technical institutes and universities throughout the province. The following programs are directly related to health administration or administration in the hospitality and tourism industry.

- **Athabasca University** offers by distance education a two year University Certificate in Health Development Administration program and a three year Bachelor of Health Administration degree program. Applicants must be at least 18 years of age and live in North America.
- The **Northern Alberta Institute of Technology** in Edmonton offers a one year certificate and a two year Hospitality Management diploma program. The minimum education requirement for both programs is Grade 11 including English and math.
- **Red Deer College** offers a two year Hospitality and Tourism diploma program with specializations in accounting and finance management, food and beverage management, and rooms and marketing management. The entrance requirement is a high school diploma or equivalent.
- The **Southern Alberta Institute of Technology (SAIT)** in Calgary offers a Hotel and Restaurant Management diploma program. The entrance requirement is a high school diploma or equivalent with English 30 or 33, and Pure Math 30 or Applied Math 30 or Math 33.
- The **University of Calgary** offers a Bachelor of Hotel and Resort Management degree program that may also be taken as a co-op program. Applicants must be admitted to an approved two year diploma program such as the Hotel and Restaurant Management program at SAIT (see above) and achieve a minimum grade point average of 3.0/4 in the diploma program before they are admitted to the BHRM program. The University of Calgary also offers four year and five year co-op Bachelor of Commerce degree programs in Tourism and Hospitality Management. The entrance requirement for the B.Comm. program is a high school diploma with an average of at least 70 per cent in English 30, Math 30 or Pure Math 30, and three other appropriate subjects.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Post-secondary institutuions throughout the province offer university transfer programs that allow students to apply up to two years of study toward university bachelor's degree programs. It is the student's responsibility to ensure that the courses they choose to take will be accepted for credit at the institution to which they wish to transfer.

Contact the **Alberta Hotel and Lodging Association** for information about a home/self study Executive Housekeeper certification program offered by the **Educational Institute of the American Hotel and Lodging Association** or contact the Educational Institute directly.

Alberta Tourism Education Council (ATEC) has developed a process for housekeeping attendants to demonstrate their skills and write an examination to earn a certificate recognized throughout Canada in the tourism and hospitality industry.

Employment and Advancement

(section revised JANUARY 2006)

Executive housekeepers are employed in:

- hotels
- motels
- hostels
- hospitals

- nursing homes
- educational institutions
- other private and public institutions.

Advancement prospects are limited unless the executive housekeeper has or is willing to take post-secondary education related to administration and management.

In Alberta, over 75 per cent of people employed as executive housekeepers work in the following industries:

- **Accommodation and Food Services**
- **Health Care and Social Assistance**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 1,000 Albertans are employed in the Executive Housekeepers occupational group which is expected to grow 1.7 to 2.7 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 10 to 30 **new** positions will be created each year **in addition** to job openings created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Salaries vary widely in this occupation depending on the position responsibilities and the executive housekeeper's education and experience.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Executive Housekeepers occupational group working part-time or full-time earned from **$15,200 to $43,900 a year.** The average salary was **$29,100 a year.**

Other Sources of Information

(section revised OCTOBER 2005)

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Hotel and Lodging Association website: www.albertahotels.ab.ca

Alberta Tourism Education Council (ATEC) website: www.atec.ca

Related Occupational Profiles

Accommodation Manager
Building Superintendent
Room/Housekeeping Attendant

Related High School Subjects

Community Health; Fashion Studies; Financial Management; Language Arts; Languages (other than English); Management and Marketing; Mathematics; Physical Education; Science (Biology; and Chemistry); and Tourism Studies

Related Post-Secondary Fields of Study

Business, Management and Administrative Studies; Human Ecology, Fashion and Food Sciences; and Personal and Food Services

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Exhibit Designer

Produced OCTOBER 2003

Exhibit designers work with others to research, plan, design and oversee the fabrication and installation of exhibits and displays.

NOC Number(s): 5243.3
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: I M D

Duties

Exhibit designers may design permanent, temporary, travelling or virtual displays or exhibits for museums, historic sites, galleries, science centres, interpretive centres, trade shows or parades. Exhibits may include two or three dimensional materials such as fine art, museum artifacts (e.g. clothing, personal items, household objects, tools, machinery), natural history or archaeological specimens, or scientific models. In historic buildings, exhibits recreate period interiors. Virtual exhibits may be posted on the Internet.

When planning new displays or exhibits, the design team must consider:

- the sponsoring organization's goals, objectives and resources
- the main ideas to be conveyed and the most effective ways to present them (e.g. signage, human interaction, audio-visual presentation)
- the characteristics of typical viewers and their comfort requirements (e.g. temperature, rest areas, literacy levels)
- requirements imposed by the space surrounding the exhibit
- traffic flow through the exhibit and necessary protections for display items (e.g. security concerns, conservation requirements)
- the overall aesthetic presentation
- installation and mobility requirements
- safety issues (e.g. fire regulations, disabled access)
- evaluation criteria to measure the success of the exhibit.

The design stages are essentially the same for any type of design project. In general, exhibit designers:

- gather information about exhibit space, proposed themes and content, audiences, timelines and budget
- produce sketches of the proposed exhibit and obtain approval for the design concept
- prepare designs, computer or three-dimensional models, and detailed working drawings
- co-ordinate the work of the production team fabricating the exhibit and, when required, pitch in to help with fabrication
- work with curatorial staff to oversee the installation of exhibits
- participate in exhibit evaluations.

Exhibit designers often supervise staff, or prepare contracts and oversee the work of contractors. They may also co-ordinate or participate in the design and production of related materials such as exhibit catalogues, signs, educational materials, advertisements, publicity notices, posters, brochures or invitations to promotional events.

Working Conditions

Exhibit designers' working conditions vary depending on the type of project. They usually work indoors in offices, studios, workshops and warehouses, but also may visit outdoor sites. Overtime may be required to finish projects on time.

Personal Characteristics

Exhibit designers need the following characteristics:

- the ability to plan and create three dimensional designs
- strong interpersonal communication skills and presentation skills
- a good imagination and the ability to develop innovative designs
- the ability to deal with frequent interruptions and work with a team of people from a variety of backgrounds.

They should enjoy synthesizing information and developing new ideas, taking a methodical approach to tasks requiring precision and directing the work of others.

Educational Requirements

Individuals who do not have formal art and design training may be hired as assistant exhibit designers if they can demonstrate a strong design ability and a willingness to learn. However, employers generally prefer to hire people who have **post-secondary education in a related field such as graphic design, illustration, animation or web design**. Education or experience in fine art, industrial design, architecture, drafting, construction, lighting, costuming or props is an asset. Senior design positions require project management skills such as budgeting and supervisory skills.

Employers usually want to see a portfolio of work. Some employers, such as the Alberta Provincial Museum and Archives, require a four year diploma or equivalent experience before considering an applicant for the position of exhibit designer. For information about related post-secondary programs, see the Graphic Designer, Illustrator, Animator, Interactive Media Developer and Painter/Printmaker occupational profiles.

Employment and Advancement

(section revised JANUARY 2006)

Exhibit designers may be employed by or work on a contract basis for:

- art galleries, museums, historic sites, science centres, interpretive centres or zoos
- government departments responsible for parks, forestry, wildlife, culture, public affairs, museums or historic sites
- theatre or television productions
- architecture or design firms
- international expositions and events
- trade shows and conventions.

Designers may advance to supervisory and management positions. Some designers form their own companies.

Exhibit designers are part of the larger National Occupational Classification 5243: Theatre, Fashion, Exhibit and Other Creative Designers. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Professional and Technical Services**
- **Information, Culture and Recreation**
- **Retail Trade**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 600 Albertans are employed in the Theatre, Fashion, Exhibit and Other Creative Designers occupational group which is expected to grow 1.2 to 2.2 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover. (**Note**: Since exhibit designers form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for exhibit designers.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Exhibit designers who work for private design companies may start at about **$10 per hour.** Freelance designers usually negotiate each contract separately.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Theatre, Fashion, Exhibit and Other Creative Designers occupational group working part-time or full-time earned from **$13,100 to $106,500 a year.** The average salary was **$28,900 a year.**

Related Occupational Profiles

Fashion Designer
Industrial Designer
Museum Technician
Set Designer
Visual Merchandiser

Related High School Subjects

Communication Technology; Construction Technologies; Design Studies; Enterprise and Innovation; Fabrication Studies; Fine Arts (Drama; and Visual Arts); Language Arts; Management and Marketing; Science; Social Studies; Tourism Studies; and Wildlife

Related Post-Secondary Fields of Study

Communications; Education and Library Studies; Engineering and Science Technologies; Fine Arts and Performing Arts; and Trades, Industrial and Related Training

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Exploration Geophysicist

Produced JUNE 2004

Geophysicists use the principles of physics, mathematics and geology to study the surface and internal composition of the earth. Exploration geophysicists look for oil, natural gas, water and minerals for economic exploitation and for environmental projects.

NOC Number(s): 2113
Minimum Education: 4 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: I O D

Duties

Geophysicists study the earth by measuring responses to different types of sound and electromagnetic energy.

- **Petroleum exploration geophysicists** study and interpret information on sediments, mineral and rock compositions and geologic structure to determine where oil and gas deposits are most likely to occur. To obtain this information, they usually collect data from seismic operations and, occasionally, from gravity, magnetic or satellite surveys.
- **Mineral exploration geophysicists** often use electrical and electromagnetic techniques to search for ore deposits.
- **Environmental geophysicists** use electrical and electronmagnetic techniques, and other techniques such such as ground penetrating radar to evaluate ground water quality. They are often responsible for all aspects of data acquisition and processing.
- **Development and production geophysicists** work closely with geologists and petroleum engineers to develop oil and gas properties and to monitor subsurface fluid distribution from the surface using seismic, microseismic, electrical and other techniques.

In the oil and gas industry, exploration geophysicists may specialize in any or all of the following areas:

- **data collection**, determining which areas to survey and the appropriate survey methods and parameters, estimating the costs of operations, making arrangements to enter the area and monitoring the activities of seismic and other crews during field operations (for more information, see the Seismic Observer occupational profile)
- **data processing,** using existing computer software or writing programs to process the data recorded during geophysical survey operations
- **data interpretation,** studying the processed geophysical data and determining the type, shape and location of rock structures underground.

Exploration geophysicists work with geologists, petroleum engineers, mining engineers and other professionals, and may be responsible for the supervision of a team of other professionals, technologists and support staff.

Working Conditions

Most petroleum exploration geophysicists work in an office environment, compiling and interpreting data collected from the field. A few work some months of the year in the field, directing the search for oil and gas deposits.

Mineral exploration and environmental geophysicists may spend a considerable amount of time in the field, sometimes in remote locations. Lifting up to 25 kilograms may be required.

Personal Characteristics

Exploration geophysicists need the following characteristics:

- an interest in geosciences, physics, math and problem solving
- the ability to analyze and synthesize data

- excellent spatial reasoning abilities
- an inquiring mind, initiative, imagination and creativity
- excellent decision-making skills
- the ability to work well in a team environment.

They should enjoy work that requires precision, developing innovative approaches and taking charge of situations.

Educational Requirements

The minimum education requirement for exploration geophysicists is a **Bachelor of Science (B.Sc.) degree in geophysics or a related science** with courses in geophysics, electronics, physics, chemistry, geology, mathematics and computer science. A master's degree may be preferred; a doctoral (PhD) degree is essential for research. Many employers provide additional training in the specialized techniques of oil and gas or mineral exploration.

In Alberta, the following institutions offer degree programs in geophysics:

- The **University of Alberta** in Edmonton offers four year general, specialization and honours B.Sc. degree programs in geophysics, and a five year co-operative program in geophysics. The entrance requirement is an overall average of at least 70 per cent in English 30, Pure Math 30, Chemistry 30, Physics 30 and one other approved Grade 12 subject (Math 31 recommended).
- The **University of Calgary** offers four year general and honours B.Sc. degree programs in geophysics. Students are admitted to the geophysics program after completing first year of the Natural Science Program in the Faculty of Science with a grade point average (GPA) of at least 2.0/4. The entrance requirement for the Natural Science Program is a high school diploma with an overall average of at least 70 per cent in English 30, Pure Math 30, Chemistry 30, and two other appropriate Grade 12 subjects (Math 31 and Physics 30 recommended).

Both universities also offer master's (M.Sc.) and doctoral (PhD) degree programs in geophysics.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Other Requirements

(section revised OCTOBER 2004)

Under Alberta's Engineering, Geological and Geophysical Professions Act, you must be a registered member of the Association of Professional Engineers, Geologists and Geophysicists of Alberta (APEGGA) to practice as a Professional Geologist or a Professional Geophysicist. You do **not** have to be registered if you work under the direct supervision of a Professional Geologist or a Professional Geophysicist and do not call yourself a Professional Geologist or Professional Geophysicist.

Employment and Advancement

(section revised JANUARY 2006)

Exploration geophysicists are employed by:

- oil and gas companies
- mining companies
- geophysical data acquisition companies
- engineering and environmental consulting companies
- data processing companies
- financial institutions
- universities
- research organizations.

Geophysicists usually start their careers in junior positions and, with ongoing training during employment, advance to more senior positions. Most job opportunities are in medium and small companies where breadth of knowledge is more important than having a particular specialization. The same is true of jobs in the geotechnical-environmental field.

Experienced geophysicists may move into private consulting or advance to management positions.

Exploration geophysicists are part of the larger National Occupational Classification 2113: Geologists, Geochemists and Geophysicists. In Alberta, most people employed in this classification work in the following industries:

- **Oil and Gas Extraction**
- **Professional and Technical Services**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

About 4,350 Albertans are employed in the Geologists, Geochemists and Geophysicists occupational group which is expected to grow 1.5 to 2.5 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 60 to 110 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since exploration geophysicists form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for exploration geophysicists.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised SEPTEMBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Geologists, Geochemists and Geophysicists occupational group working part-time or full-time earned from **$37,900 to $159,600 a year.** The average salary was **$71,700 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Association of Professional Engineers, Geologists and Geophysicists of Alberta (APEGGA) website: www.apegga.org

Canadian Society of Exploration Geophysicists (CSEG) website: www.cseg.ca

Related Occupational Profiles

Geological and Geophysical Technologist
Geologist
Hydrologist
Oceanographer
Physicist

Related High School Subjects

Design Studies; Energy and Mines; Information Processing; Language Arts; Mathematics; Physical Education; Science (Chemistry; and Physics); Social Studies; and Wildlife

Related Post-Secondary Fields of Study

Computer and Information Technology; Environment, Forestry and Related Studies; Mathematics; and Sciences

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For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Expressive Arts Therapists

Produced JANUARY 2005

Expressive arts therapists use artistic media to help clients maintain and improve their physical and mental health by recognizing and developing often-untapped inner resources.

NOC Number(s): 3144
Minimum Education: 6 years post-secondary education/training
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: **S I M**

Duties

Expressive arts therapists use creative, artistic approaches to treat mental and physical illnesses and disabilities. They provide a supportive environment and therapy for people who have difficulty expressing themselves due to physical, emotional or other limitations. For example, children can often approach difficult issues more easily and convey messages more clearly through artistic endeavours than they can with words.

Expressive arts therapists may use visual art, dance, drama or music, or a combination of arts.

- **Art therapists** use art in treatment, assessment and research. They provide therapeutic services for individuals and groups of people of all ages, and act as consultants for other mental health professionals.
- **Dance therapists** focus on the non-verbal aspects of behaviour by encouraging clients to use creative and expressive movement to address emotional issues and improve emotional and physical health.
- **Drama therapists** use drama, creative play, psychodrama, role play, improvisation and theatre to further clients' emotional growth and integration.
- **Music therapists** use techniques such as improvisation, guided imagery and relaxation to help people connect to themselves and others, and achieve therapeutic goals. They use sound, music and rhythm to actively or passively engage clients in the therapeutic process.

For each client or group of clients, therapists:

- assess client needs and strengths
- identify specific treatment goals and objectives
- choose an appropriate approach and develop a treatment program
- implement programs that involve music, art, drama and/or dance activities
- evaluate the program's effectiveness on an ongoing basis
- adjust programs as needed.

As members of therapeutic teams or as private practitioners, expressive arts therapists work closely with other professionals (e.g. psychiatrists, psychologists, teachers and counsellors).

Working Conditions

Expressive arts therapists generally work standard office hours in traditional placement settings but may work in private practices and work some evenings or weekends. All therapies require a specific, safe environment.

Music therapists may have to lift and carry instruments and other equipment that weighs up to 25 kilograms.

Personal Characteristics

Expressive arts therapists need the following characteristics:

- creativity
- enthusiasm
- a non-judgemental attitude
- strong communication and interpersonal skills
- flexibility and a tolerance for ambiguity

- initiative.

They should enjoy working with people, designing and implementing innovative therapy programs and employing artistic techniques.

Educational Requirements

(section revised MAY 2005)

Art, dance and drama therapists must have **a related master's degree** or an equivalent combination of education and experience. Music therapists must be well-rounded musicians who have at least a bachelor's degree in the social and behavioural sciences, counselling or psychotherapy.

In Alberta, the **Campus Alberta Graduate Program in Counselling**, a tri-university partnership of Athabasca University, the University of Calgary and the University of Lethbridge, offers a Master of Counselling degree program with a specialization in art therapy. The entrance requirement is a minimum grade point average (GPA) of 3.00/4 in the last ten full-course equivalents of a four year bachelor's degree program that includes specified courses in psychology or educational psychology and a counselling skills course, or equivalent.

Outside of Alberta, **art therapy** programs are offered by the:

- **Vancouver Art Therapy Institute** in Vancouver, British Columbia
- **British Columbia School of Art Therapy** in Victoria
- **Kutenai Art Therapy Institute** in Nelson, British Columbia
- **Toronto Art Therapy Institute** in Ontario
- **Concordia University** in Montreal, Quebec
- Centre de Ressourcement par les Arts et la Nature in Sherbrooke, Quebec.

Music therapy programs at the bachelor's degree level are offered by:

- **Acadia University** in Wolfville, Nova Scotia
- **Canadian Mennonite University** in Winnipeg, Manitoba
- **Capilano College/Open University** in North Vancouver
- **Wilfrid Laurier University** in Waterloo, Ontario (also offers a master's program)
- **University of Windsor** in Ontario
- **Université du Québec** à Montreal.

Drama therapy is offered at **Concordia University** in Montreal.

No master's degree program in **dance therapy** is offered in Canada. However, Australia's **Wesley Institute for Ministry and the Arts** offers approved dance therapy courses in Calgary each summer and periodically at Concordia University in Montreal. Students who have a master's degree in psychology or social work and who complete ten courses and a 700-hour supervised dance therapy internship are eligible for certification by the **American Dance Therapy Association**.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

(section revised JANUARY 2006)

Expressive arts therapists work with children and adults in a variety of settings:

- rehabilitation facilities
- hospitals
- schools
- prisons and other correctional facilities
- private practice
- community mental health facilities
- senior centres and nursing homes
- day-care centres
- counselling centres and clinics.

Expressive arts therapists are part of the larger National Occupational Classification 3144: Other Professional Occupations in Therapy and Assessment. In Alberta, over 75 per cent of people employed in this classification work in the **Health Care and Social Assistance** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and events affecting overall employment (especially in the Health Care and Social Assistance industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 750 Albertans are employed in the Other Professional Occupations in Therapy and Assessment occupational group which is expected to grow 2.5 to 3.5 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 10 to 30 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since expressive arts therapists form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for expressive arts therapists.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Other Professional Occupations in Therapy and Assessment occupational group working part-time or full-time earned from **$21,400 to $78,500 a year.** The average salary was **$38,700 a year.**

Incomes for expressive arts therapist who have master's degrees are generally comparable to other mental health professionals who have similar qualifications (e.g. psychologists).

For information about current collective agreements in the public and not-for-profit sectors, see the Health Sciences Association of Alberta (HSAA) website.

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

American Art Therapy Association (AATA) website: www.arttherapy.org

American Dance Therapy Association (ADTA) website: www.adta.org

Campus Alberta Graduate Program in Counselling website: www.abcounsellored.net

Canadian Art Therapy Association (CATA) website: www.catainfo.ca

Canadian Association for Music Therapy (CAMT) website: www.musictherapy.ca

Health Sciences Association of Alberta (HSAA) website: www.hsaa.ca

Music Therapy Association of Alberta (MTAA) website: www.mtaa.ca

National Association for Drama Therapy (NADT) website: www.nadt.org

Related Occupational Profiles

Mental Health Worker
Occupational Therapist
Psychologist
Recreation Therapist
Social Worker

Related High School Subjects

Community Health; Fine Arts (Dance; Drama; Music; and Visual Arts); Language Arts; Science (Biology; and Chemistry); and Social Studies

Related Post-Secondary Fields of Study

Education and Library Studies; Fine Arts and Performing Arts; Social Sciences, Law and Religious Studies; and Social, Community and Protective Services

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Family/Marriage Counsellor

Produced DECEMBER 2005

Family/marriage counsellors provide counselling to help families, couples and individuals resolve interpersonal difficulties, develop effective and satisfactory relationships, and build meaningful support systems.

NOC Number(s): 4153
Minimum Education: 6 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **S I d**

Duties

Family/marriage counsellors help individuals, couples and families understand and enhance relationships, resolve emotional issues from broken and impaired relationships, and improve personal well-being. They work collaboratively with clients to improve client strengths, resources and resilience, and develop clearer goals for the future.

In general, family/marriage counsellors:

- determine if factors such as family violence, addictions, substance abuse or mental health problems are contributing to family or marital problems
- ask questions that guide and direct clients' thinking and stimulate action
- assist clients in identifying feelings and behaviour
- help couples and families identify and use their existing skills and abilities
- assist clients in developing healthy communication skills
- help couples and families confront their problems in a constructive manner
- act as coach and collaborator to develop skills and strategies for dealing with family-related concerns
- conduct crisis counselling sessions, as required, to help clients deal with suicide, divorce, unemployment, bereavement and other life transitions
- consult with or refer clients to other professionals when appropriate
- maintain confidential records of clients' progress.

Working Conditions

Counsellors generally work in an office environment but also may work in residential, health care or in-home settings. They may work some evenings or weekends to accommodate client needs or work overtime when clients need immediate help. The work can be stressful, emotionally demanding and challenging.

Personal Characteristics

Family/marriage counsellors need the following characteristics:

- a genuine interest in people
- emotional maturity
- excellent written and oral communication skills
- sensitivity to cultural, religious and ethnic issues
- the ability to listen non-judgementally and comprehend with empathy and understanding
- the creative ability required to develop new programs or ways of doing things
- decision-making ability.

They should enjoy counselling people, synthesizing information and helping clients find innovative solutions to problems.

Educational Requirements

Most family/marriage counsellors have at least a **master's degree** in marriage and family therapy, social work, psychology or a related discipline. Employers also may require applicants to be registered social workers or chartered psychologists. For information about master's degree programs and certification requirements in Alberta, see the Psychologist and Social Worker occupational profiles.

In general, the entrance requirement for a master's degree program is a competitive grade point average (GPA) in the last two years of a four year bachelor's degree program at an accredited institution.

Four year social science bachelor's degree programs are offered by post-secondary institutions throughout Alberta. Entrance requirements vary depending on the program but, in general, include a high school diploma with a competitive average (ranging from 60 to 80 per cent depending on the institution and program) in English Language Arts 30-1 or English 30 and four other approved or specified Grade 12 subjects (30 level courses in social studies, sciences, math or a language other than English). Admission to Athabasca University is open to residents of Canada who are at least 16 years of age.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Other Requirements

In Alberta, family/marriage counsellors must be registered with a professional college. Both the Alberta College of Social Workers and the College of Alberta Psychologists require members to earn continuing education credits to maintain their registration.

Employment and Advancement

(section revised JANUARY 2006)

Family/marriage counsellors may work in:

- health care and rehabilitation clinics and hospitals
- counselling and family therapy centres
- government or private social service agencies
- private practices.

Advancement opportunities depend on the size and nature of the employing organization.

Family/marriage counsellors are part of the larger National Occupational Classification 4153: Family, Marriage and Other Related Counsellors. In Alberta, over 75 per cent of people employed in this classification work in the **Health Care and Social Assistance** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Health Care and Social Assistance industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 3,800 Albertans are employed in the Family, Marriage and Other Related Counsellors occupational group which is expected to grow 1.9 to 2.9 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 70 to 120 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since family/marriage counsellors form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for family/marriage counsellors.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

According to the **2005 Alberta Wage and Salary Survey**, most Albertans in the Family, Marriage and Other Related Counsellors occupational group working part-time or full-time earned from **$16,600 to $105,300 a year.** The average salary was **$30,700 a year.**

For information about current collective agreements in the public and not-for-profit sectors, see the Health Sciences Association of Alberta (HSAA) website.

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta College of Social Workers website: www.acsw.ab.ca

College of Alberta Psychologists website: www.cap.ab.ca

Health Sciences Association of Alberta website: www.hsaa.ca

Psychologists' Association of Alberta website: www.psychologistsassociation.ab.ca

Related Occupational Profiles

Addictions Counsellor
Life Skills Coach
Mediator
Mental Health Worker
Psychologist
Social Worker

Related High School Subjects

Community Health; Financial Management; Language Arts; Legal Studies; Science (Biology; and Chemistry); and Social Studies

Related Post-Secondary Fields of Study

Social Sciences, Law and Religious Studies; and Social, Community and Protective Services

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For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Farm Worker/Technician

Produced FEBRUARY 2005

Farm workers/technicians plant, cultivate and harvest crops, raise livestock and poultry, operate and maintain farm equipment, and maintain and repair farm buildings.

NOC Number(s): 8431
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus below average occupational growth in Alberta
Interests: **M O i**

Duties

Farm workers perform tasks such as the following on farms or ranches:

- plant, fertilize, cultivate, spray, irrigate and harvest grain, forage or specialty crops
- repair farm buildings and fences
- handle, feed and care for livestock and poultry
- milk cows
- promote and maintain animal health (e.g. keep enclosures clean, help immunize animals, watch for signs of disease or injury) and care for sick animals
- drive trucks
- operate and maintain equipment
- prepare and transport produce to market.

In addition to the above duties, ranch workers may:

- patrol grazing lands, usually on horseback or all-terrain vehicles
- herd animals
- ensure water supplies and maintain fencing
- protect herds from predators, possibly with the assistance of trained dogs
- attend animals during birthing and assist with difficult births
- assist in branding and castrating cattle
- shear sheep.

Farm machinery operators maintain and operate agricultural equipment (e.g. machines that cultivate, fertilize and seed land, and spray and harvest crops).

Working Conditions

Farm workers work long hours, particularly in the summer months, often outdoors in all kinds of weather. Although automation and mechanization have helped to make the work less tedious and physically demanding, repetitive manual labour is often required. Farm workers may routinely lift items weighing up to 25 kilograms or more.

Farm workers are not covered by labour standards, occupational health and safety, or Workers Compensation legislation in Alberta.

Personal Characteristics

Farm workers need the following characteristics:

- good health and stamina (physically fit, not allergic to grains, feeds, animals or dust)
- good co-ordination and manual dexterity
- the ability to follow instructions and work with little supervision
- a genuine interest in agriculture and willingness to learn
- a responsible, caring attitude when handling equipment, produce and animals.

Farm machinery operators also need the mechanical aptitude required to operate and maintain complex equipment.

All farm workers should enjoy having clear rules and organized methods for their work, operating and maintaining equipment, and monitoring the health of crops, livestock or poultry.

Educational Requirements

The education and training requirements for farm workers vary from one employer to another. Some employers will hire job applicants who have limited farming experience and provide comprehensive on-the-job training. Others prefer to hire applicants who already have farm experience. Advancement to supervisory and farm management positions may require related education as well as extensive farm experience.

The **Alberta Green Certificate Farm Training Program** through **Alberta Agriculture, Food and Rural Development** provides training that qualifies individuals as farm technicians, farm supervisors and farm managers. This is an apprenticeship-type program that combines practical on-farm experience and training with formal education in the form of home study courses, workshops, short courses or college agricultural courses. The Green Certificate program offers three levels of training.

1. farm technician (swine, dairy, cow calf beef, feed lot, sheep, crop and irrigated crop) requires approximately six to nine months to complete.
2. herdsman or production supervisor requires two or more years to complete.
3. farm business manager requires three or more years of training.

Applicants for the Green Certificate Farm Training Program must be at least 15 years of age and have a supportive farm trainer and job site. Trainees who are also high school students can receive high school diploma credits in an approved optional curriculum for achieving a Green Certificate.

Lakeland College in Vermilion offers a one year General Agriculture certificate program. The entrance requirement is a high school diploma with English Language Arts 30-1 or English 30 (or 65 per cent in English Language Arts 30-2 or English 33), Pure Math 20 or Applied Math 20 (or Math 20 or 23) and one of the following: Biology 20, Chemistry 20, Physics 20 or Science 20.

A wide variety of short, specialized in-class or distance education courses related to agriculture are offered by:

- **Alberta Agriculture, Food and Rural Development**
- the **Rural Education and Development Association**
- post-secondary education institutions that offer full-time agriculture programs (for lists and links, see related profiles such as Dairy Producer, Grain and Forage Crop Producer and Livestock/Poultry Producer).

Courses range in length from one day to several weeks and provide flexibility for those who choose not to leave their farm operations for long periods of time. Courses are advertised in brochures and local newspapers.

Employment and Advancement

(section revised JANUARY 2006)

Farm workers may be permanent or part-time employees, or family members of the farm owner. Many jobs are seasonal or casual. Technological changes, decreases in family size, increases in the amount of land needed to maintain a viable business and other economic factors have created a greater need for employed farm staff.

Some people seek positions as general farm workers through direct contact and negotiations with individual farm owners. Others use the services of government offices or private recruitment and placement agencies to find employment.

Experienced farm workers, particularly those who have related education and demonstrated leadership skills, mechanical skills and business skills, may advance to supervisory and farm management positions. Farm supervisors or herdsmen, sometimes called production supervisors, oversee a specific area of a farming operation and report directly to the farmer or to farm business manager.

In Alberta, most people employed as farm workers/technicians work in the **Agriculture** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Agriculture industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 14,500 Albertans are employed in the General Farm Workers occupational group, which is expected to grow up to 0.5 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Wages are usually negotiated between hired farm workers and farm employers, and vary with the type of work being done and the hours of work. For seasonal and year-round positions, accommodations may be provided on the farm for a nominal rent or as a taxable benefit.

Annual incomes in this occupation vary considerably. Often, farm workers are contracted to work for a specified period of time.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the General Farm Workers occupational group working part-time or full-time earned from **$12,200 to $42,700 a year.** The average salary was **$25,200 a year.**

Other Sources of Information

Alberta Agriculture, Food and Rural Development (AFRD) website: www.agric.gov.ab.ca

Rural Education and Development Association (REDA) website: www.compusmart.ab.ca/ruraled/

Related Occupational Profiles

Beekeeper
Dairy Producer
Grain and Forage Crop Producer
Livestock/Poultry Producer
Swine Technician

Related High School Subjects

Agriculture; Community Health; Electro-Technologies; Fabrication Studies; Financial Management; Language Arts; Mathematics; Mechanics; Physical Education; and Science (Biology; Chemistry; and Physics)

Related Post-Secondary Fields of Study

Agriculture and Related Technologies; and Trades, Industrial and Related Training

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For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Farrier

Produced MAY 2005

Farriers trim horses' hooves and, when necessary, forge metal bars into custom-made horseshoes or shape commercial shoes to fit and suit a particular horse.

NOC Number(s): 7266.1
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus below average occupational growth in Alberta
Interests: **O M I**

Duties

Farriers care for horses' hooves and may apply horseshoes for protection, traction or therapeutic/gait correction. In general, farriers:

- trim and shape hooves
- look for any existing or developing foot problems, and work in co-operation with equine veterinarians
- remove old horseshoes or select the correct shoes, shoe size and type of shoe for the type of work done by the animal, the type of terrain and the condition of the hoof
- shape shoes (hot or cold) to fit a horse's hooves
- nail horseshoes to hooves or glue shoes on if hooves cannot accommodate nailing
- ensure that shoes fit properly
- educate horse owners about caring for horses' feet.

Shoeing a horse usually takes about an hour. Farriers must work quickly and confidently and, at the same time, reassure nervous horses and deal with troublesome ones.

Farriers also may fashion equipment such as hoof picks, fire pokes and fire shovels out of bars of steel.

Working Conditions

Most farriers drive from client to client in vehicles equipped with portable forges, anvils and the tools of their trade. They often work long hours outdoors or in stables.

The work is physically demanding, requiring constant bending and heavy lifting (over 25 kilograms). Occupational hazards include burns from working with hot metal and injuries resulting from kicks, bites, being stepped on or pushed, especially when working with unco-operative horses.

Personal Characteristics

Farriers need the following characteristics:

- physical stamina
- interest and good judgment in working with horses
- patience and perseverance
- good eyesight and co-ordination
- excellent communication skills for dealing with horse owners
- the ability to work alone
- a willingness to keep up to date through professional development activities (e.g. reading, attending clinics).

They should enjoy using tools to perform tasks requiring precision, using standard techniques and methods, and finding innovative solutions to problems (e.g. dealing with problem horses).

Educational Requirements

Farriers need a working knowledge of:

- how to get along with horses
- gaits
- general horse husbandry practices
- horse anatomy and physiology as it applies to conformation and stance
- how to shoe a horse to compensate for or correct a deficiency in conformation
- how to handle a forge and the tools of the trade.

Since most farriers are self-employed, they also must be self-motivated and have good marketing and business skills.

In Alberta, **Olds College** offers a one year Farrier Science certificate program that runs from January to December. Applicants must be at least 18 years of age, have English 20 or 23 (or equivalent) and Biology 20 or Science 20, and demonstrate knowledge of the farrier profession, horse handling and tool use. A questionnaire, references and an interview are required.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check the Olds College calendar or website.

Another method of learning the skills of the farrier trade is to arrange an informal apprenticeship with an experienced farrier. The length of such a training program would depend on the person's skills and desire to learn. However, informal apprenticeships are often difficult to set up because farriers are paid for the work done, not the time required, and it takes time to train a person.

Employment and Advancement

Most farriers are self-employed. Many start out by working part-time while employed in another job and go full-time when their practice has grown sufficiently. They may work in small shops or from mobile units and travel to:

- breeding farms
- riding stables
- acreages, farms and ranches
- racetracks
- feedlots.

Farriers work year round with working and pleasure stock and with race horses but there tends to be less work in the winter months.

Experienced farriers may specialize in a particular type of horse (e.g. show horses, standardbred horses or pleasure horses). Advancement generally takes the form of building a larger clientele.

Farriers are part of the larger National Occupational Classification 7266: Blacksmiths and Die Setters. In Alberta, people employed in this classification work in the following industries:

- **Repair, Maintenance, Personal and Other Services**
- **Forestry and Logging.**

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Very few Albertans are employed in the Blacksmiths and Die Setters occupational group.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Farriers are self-employed and must pay operating expenses from their gross earnings. Their net earnings vary considerably depending on the geographic area and the farrier's reputation and business skills.

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Related Occupational Profiles

Animal Care Attendant

Related High School Subjects

Agriculture; Fabrication Studies; Financial Management; Language Arts; Management and Marketing; Physical Education; and Science (Biology; and Physics)

Related Post-Secondary Fields of Study

Agriculture and Related Technologies

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Fashion Designer

Produced APRIL 2005

Fashion designers create new styles of clothing and accessories such as jewellery, belts, gloves and hats.

NOC Number(s): 5243.2
Minimum Education: 1 year post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: I M D

Duties

In creating new designs, fashion designers follow a fairly standard process to plan, design and construct a garment. In general, they:

- research fabric and styling trends
- identify the needs and preferences of their target market (customers)
- choose fabric swatches and make rough sketches
- transfer directly to a flat pattern or drape the fabric over a dressmaking form
- produce a flat pattern on paper to make a sample garment
- cut the fabric to the shape of the pattern
- make alterations on the sample and pattern after it is tried on by live models.

A number of samples may have to be made before a design is satisfactory. If the garment is being produced for the wholesale market:

- the pattern is cut and graded to standardized sizes
- sewing specifications are added
- the product is either manufactured in-house or contracted out to be cut, sewn and finished.

Designers supervise all phases and details of pattern preparation: cutting, fitting and garment production. They choose the fabric and trim as well.

Marketing their goods is a big part of a designer's business. This often includes:

- determining price points for styles
- duplicating their collections for agents and sales representatives who travel to other garment centres
- promoting their collections through fashion shows and personal appearances
- travelling frequently to attend trade shows to buy materials.

Designers put together a line of garments or accessories to help promote their products. As well, many recognized designers are starting to market their goods in their own boutiques or through online or mail order catalogues.

Fashion designers must keep up to date with fashion trends so their clothes are fashion forward. This means that they create original goods which are not just imitations or copies of everyone else's look. Designers who work for manufacturers may do less original work and adapt other designers' ideas for the mass market.

Haute Couture is a very specialized area of fashion design that caters to individual clients. These are original designs, usually one-of-a-kind, representing the top end of the fashion industry both in style and price. Couturiers produce a much smaller volume of clothing, usually only one sample of each design.

Working Conditions

Most fashion designers work long, irregular hours. Overtime is often required before big shows and during season rushes. Work rooms may be crowded. Designers must meet tight deadlines while maintaining a high level of quality and paying careful attention to detail.

Personal Characteristics

Fashion designers need the following characteristics:

- imagination and creative talent
- a good sense of colour
- an identifiable personal style
- excellent time management skills and a capacity for hard work and long hours
- good communication skills
- perseverance and the ability to sell ideas to others
- the ability to handle criticism
- the ability to work well with a wide variety of people
- willingness to do the reading and research required to keep informed about new materials, trims and manufacturers' practices.

They should enjoy synthesizing information and developing innovative designs, doing methodical, precise work when preparing patterns and fitting garments, and advising customers.

Educational Requirements

Fashion designers require an in-depth, working knowledge of textiles, technical clothing construction, sketching, draping, pattern-making, sewing, finishes and fitting. Experience in dealing with consumers at the retail level and computer skills are definite assets.

Designers also need an understanding of how to develop and sell a business plan to financial backers, and the skills required to operate a small business (e.g. organization, accounting, marketing).

Training programs vary considerably in content, length, entrance requirements, cost and reputation in the clothing industry. Prospective students should discuss training options with practising fashion designers before enrolling in a training program.

In Alberta, the following post-secondary institutions offer programs related to fashion design:

- **Lethbridge Community College** offers one year certificate and two year diploma programs in Fashion Design and Merchandising. The entrance requirement is a high school diploma or equivalent with Math 20 or 23, Applied Math 20 or Pure Math 20.
- **Marvel College**, a private vocational school in Edmonton, offers a 52 week Fashion Design and Apparel Production program which includes a six week practicum. The entrance requirement is a high school diploma or equivalent.
- **Northern Lakes College** in Grouard offers workshops in Aboriginal Arts and Design. All workshops are noncredit and do not have entrance requirements.
- **Olds College** offers one year certificate and two year diploma Fashion programs. The entrance requirement is a high school diploma or equivalent with English Language Arts 30-1 or 30-2 (or English 30 or 33), and Pure or Applied Math 20 (or Math 20 or 23). Production majors should have above average sewing skills.
- The **University of Alberta** in Edmonton offers a four year Bachelor of Science (B.Sc.) degree in Human Ecology, with a specialization in Textiles and Clothing. The entrance requirement is a high school diploma or equivalent with a minimum overall average of 70 per cent in English 30, Math 30 or Pure Math 30, Chemistry 30 or Biology 30, and two other approved Grade 12 subjects (CTS Fashion Studies recommended).

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Post-secondary institutions throughout the province offer university transfer programs that allow students to apply up to two years of study toward university bachelor degree programs. It is the student's responsibility to ensure that the courses they choose to take will be accepted for credit at the institution to which they wish to transfer.

Employment and Advancement

(section revised JANUARY 2006)

The fashion design industry is centred primarily in major urban centres and is very competitive.

New designers must develop their own lines and promote their services by entering shows or organizing their own shows. Some designers cater to small specialty stores or particular product lines such as uniforms, safety and protective apparel, or leisure wear. Designers may hire an agent at a fashion market where several fashion designers are represented together. This often leads to greater exposure.

Beginning designers with manufacturing companies usually rotate through jobs such as assistant to the pattern maker, draper, sample maker, grader and dressmaker. With experience they might become design assistants. Many designers work as in-house designers for specialty stores or they freelance (produce individual designs for clients).

Fashion designers may use their skills full-time in accessory design, fashion consulting or designing uniforms for large corporations. They also may work part-time as fashion illustrators, photographers' stylists, fashion writers, fashion show commentators or costume designers.

Fashion designers are part of the larger National Occupational Classification 5243: Theatre, Fashion, Exhibit and Other Creative Designers. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Professional and Technical Services**
- **Information, Culture and Recreation**
- **Retail Trade**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 600 Albertans are employed in the Theatre, Fashion, Exhibit and Other Creative Designers occupational group which is expected to grow 1.2 to 2.2 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover. (**Note**: Since fashion designers form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for fashion designers.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Theatre, Fashion, Exhibit and Other Creative Designers occupational group working part-time or full-time earned from **$13,100 to $106,500 a year.** The average salary was **$28,900 a year.**

Famous designers earn much more.

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Apparel Career Focus website: www.apparelcareerfocus.ca

Apparel Human Resources Council (AHRC) website: www.apparel-hrc.org

Related Occupational Profiles

Career and Technology Studies Teacher
Costume Designer
Exhibit Designer
Home Economist
Human Ecologist
Visual Merchandiser

Related High School Subjects

Design Studies; Enterprise and Innovation; Fashion Studies; Financial Management; Fine Arts (Visual Arts); Language Arts; Management and Marketing; Mathematics; Science; and Social Studies

Related Post-Secondary Fields of Study

Human Ecology, Fashion and Food Sciences

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Feed Mill Production Worker

Produced MARCH 2005

Feed mill production workers operate machines that clean, separate, crush, grind, mix, pellet and bag grains for animal and poultry feed.

NOC Number(s): 9461.2
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: O M i

Duties

Feed mill production workers may specialize in one area of the operation or they may rotate duties throughout the plant. In general, they:

- operate pellet mills, rolling and grinding equipment, mixing and blending equipment or packaging equipment
- conduct quality control checks
- maintain records of production information
- maintain and repair equipment
- handle bagged products and sales inventory in the warehouse
- operate forklifts
- load and drive trucks.

The industry is changing and production workers are being assigned more responsibility in ensuring that proper production processes are used. Many plants are being automated. In most plants, workers interact with other staff members in all parts of the operation.

Working Conditions

The work is performed primarily indoors. The working environment may be noisy and dusty. Shift work is usually required.

Lifting over 25 kilograms may be required.

Personal Characteristics

Feed mill production workers need the following characteristics:

- good health and stamina (no allergies to grain dust)
- a high degree of manual dexterity
- the ability to understand and follow oral and written instructions
- the ability to work quickly and steadily, and work with little supervision
- mechanical ability
- the ability to work as part of a team.

Feed mill production workers should enjoy operating and controlling equipment, having clear rules and organized methods for their work, and adjusting machines.

Educational Requirements

There are **no standard education requirements** for feed mill production workers. However, employers may require job applicants to have a high school diploma. Related training or experience (e.g. a farm background) and computer skills are definite assets.

Feed mill production workers are generally **trained on the job** to operate machinery in various aspects of mill operations. This may involve:

- learning and following standard operating procedures for good manufacturing practices
- maintaining records for Hazard Analysis and Critical Contol Point (HACCP) certification
- learning and following health and safety procedures
- obtaining a forklift certificate.

When there is sufficient demand for them, related short courses are offered by the continuing education divisions of post-secondary institutions that offer agricultural programs (e.g. **Lakeland College**, **Lethbridge Community College**, **Northern Alberta Institute of Technology**, **Olds College**). For current information, please check post-secondary calendars/websites and local newspapers.

Employment and Advancement

(section revised JANUARY 2006)

Employees who have no previous experience in feed mill production usually start as general plant help. After obtaining experience around the mill, they are trained to operate machinery.

In most plants, individuals who have demonstrated leadership abilities may advance to lead hand and supervisory positions. Some production workers may become feed sales representatives or move into marketing positions (if they take additional training and have a suitable personality).

Feed mill production workers are part of the larger National Occupational Classification 9461: Process Control and Machine Operators, Food and Beverage Processing. In Alberta, most people employed in this classification work in the **Food and Beverage Products Manufacturing** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Food and Beverage Products Manufacturing industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 2,050 Albertans are employed in the Process Control and Machine Operators, Food and Beverage Processing occupational group which is expected to grow 1.2 to 2.2 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 20 to 50 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since feed mill production workers form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for feed mill production workers.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Process Control and Machine Operators, Food and Beverage Processing occupational group working part-time or full-time earned from **$11,900 to $54,000 a year.** The average salary was **$26,300 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Animal Nutrition Association of Canada (ANAC) website: www.anac-anac.ca

Related Occupational Profiles

Agricultural Products Processing Machine Operator

Related High School Subjects

Agriculture; Community Health; Language Arts; Mechanics; Physical Education; and Science

Related Post-Secondary Fields of Study

Trades, Industrial and Related Training

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Field Production Operator

Produced AUGUST 2005

Field production operators are responsible for the initial separation processes or the special treatment required to ensure that impurities such as water, gas and sediments are removed from oil and gas in the field. Once separated, the oil or gas is transported by pipeline to refineries, gas plants or markets.

NOC Number(s): 9232
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: **O I d**

Duties

Depending on the company, field production operators may be responsible for the field production of oil wells or gas wells, or both. They optimize production by:

- monitoring production and running diagnostics on well performance
- maintaining flow lines
- scheduling and supervising down hole wireline dewaxing programs on flowing oil wells
- monitoring down hole pump efficiency on artificial lift wells and reporting malfunctions
- identifying failed equipment and reporting which replacement parts are needed.

Senior production operators also may:

- identify safety hazards and issue safe work permits
- supervise work crews to ensure safe operating practices and compliance with legislated and corporate requirements
- monitor environmental issues and report any incidents to regulatory bodies.

Oil field production operators are usually responsible for a number of wells (the number depending on the size of the oil field, level of automation, production systems and company operating the wells). Specific duties vary from one position to another and from one company to another. For example, some oil field production operators, called pumpers, are responsible only for checking wellhead equipment. Other oil field production operators, called battery operators, work entirely at batteries (field stations that have treatment units, water disposal units and storage units). However, in most companies, oil field production operators are responsible for wellhead equipment, batteries and satellite facilities.

If enhanced recovery methods such as carbon dioxide or water injection are used, field production operators may operate either system. In the case of steam flood operations, operators must have additional power engineering certification.

In general, oil field production operators:

- take pressure and flow readings at oil wells
- compute and record well test data
- examine equipment on the wellhead to ensure it is running properly
- inspect flow lines from the oil well
- supervise hot oilers and pressure trucks
- examine oil lines for leaks, hydrates or wax plugging
- maintain equipment and trouble-shoot problems
- isolate part of a system for inspection, repair and cleaning
- report their findings, sometimes by mobile radio
- maintain good relations with land owners.

At treatment units in batteries, they may:

- obtain samples and readings
- input data to a computer program
- conduct basic tests on different substances
- add chemicals to the unit

- maintain equipment.

At water disposal units and oil storage tanks, they usually:

- measure pressures, temperatures and flow rates
- check storage capabilities
- measure levels in the tanks
- maintain equipment.

Depending on the level of automation of the field systems and processes, field production operators may have to manually close and open or adjust valves and pressures in an area. They also have to check the gathering systems that transport any unused gas from the battery to the gas plant or other markets.

In some fields, oil field production operators also may handle maintenance. Those who work with a helper are responsible for training the helper.

Gas field production operators are responsible for a number of gas wells depending on the level of automation, the processes and systems used, the size of the gas field and the employing organization. The amount of travelling they must do depends on whether gas wells are near each other or scattered in isolated areas.

At each well, gas field production operators:

- check equipment that controls the flow and pressure of the well
- check valves, flowlines and hydrate suppression systems
- take readings of temperatures, pressures and flow rates
- take gas samples
- maintain equipment.

They also may bring on wells or shut in wells. When there are no dehydration facilities near a gas well, operators must check the heaters in the gathering system. When there are problems, they may have to:

- relight pilot lights
- check for corrosion and flowline leaks
- adjust valves that control flow from various gathering lines
- check compressors
- add corrosion inhibitors or dewpoint depression chemicals.

If dehydration facilities are near the gas well, field production operators may:

- record readings
- take samples
- conduct basic tests on the samples.

Working Conditions

Oil and gas field production operators are required to drive to a variety of work sites and may be required to lift items weighing up to 25 kilograms or more. They must be aware of potential hazards (e.g. exposure to toxic chemicals such as hydrogen sulphide) and know how to handle emergency situations.

Oil field production operators may work out of a battery or field station. They often are required to work shifts and be on call.

Gas field production operators work out of a field station or gas plant. They generally work only during the day but they may be on call 24 hours a day.

Personal Characteristics

Field production operators need the following characteristics:

- excellent oral and written communication skills
- mechanical aptitude
- analytical skills
- good eye-hand co-ordination
- excellent vision including colour vision
- good hearing
- agility, endurance and the ability to lift heavy equipment
- mathematical ability (to prepare charts and graphs)
- the ability to work with little supervision

- excellent judgement and a concern for safety.

They should enjoy controlling equipment, instruments and machinery; analyzing information to solve problems and working with others in a team.

Educational Requirements

There are **no formal educational requirements** for field production operators but employers usually prefer to hire people who have at least a high school diploma. Previous work experience with machines or electrical equipment is a definite asset.

Field production operators are trained on the job and take first aid and safety training courses (e.g. one day H2S Alive courses offered by the continuing education departments of post-secondary institutions and by organizations such as the **Alberta Safety Council** and **Enform** (formerly Petroleum Industry Training Service and Canadian Petroleum Safety Council)).

In Alberta, post-secondary institutions throughout the province offer power engineering courses that may be useful for people interested in becoming field production operators (see the Power Engineer occupational profile). **Oil** field production operators who wish to operate steam injection units used in enhanced recovery operations must have at least a Fourth Class Power Engineering Certificate. **Gas** field production operators may benefit from taking training as gas plant operators (see the Gas Plant Operator occupational profile). The following institutions offer other related post-secondary programs that are one year or less in length.

- **Enform** (formerly Petroleum Industry Training Service and Canadian Petroleum Safety Council) in Calgary and in Nisku (near Edmonton) offers training courses. Contact Enform for information regarding course schedules and admission requirements.
- **Lakeland College** in Lloydminster offers a Gas Process Operations certificate program and a one year Heavy Oil Operations Technician certificate program. The entrance requirement for both programs is a high school diploma with English Language Arts 30-1 or English 30 (or 65 per cent in ELA 30-2 or English 33), Pure Math 30 or Math 30 (or 65 per cent in Applied Math 30 or Math 33), and Physics 20 or Chemistry 20 (or 65 per cent in Science 20).
- The **Northern Alberta Institute of Technology (NAIT)** in Fairview offers a Gas Process Operations certificate program. The entrance requirement is at least a C in Grade 10 English and math, or equivalent.
- The **Southern Alberta Institute of Technology (SAIT)** in Calgary offers a 26 module Production Field Operations certificate program by distance education.

For information about related two year diploma programs, see the Chemical Engineering Technologist and Petroleum Engineering Technologist occupational profiles.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

(section revised JANUARY 2006)

Field production operators are employed by companies involved in the production of oil and gas. Information on field production operator positions can usually be obtained by contacting company field offices or gas plants that are usually located in or around smaller centres in Alberta.

Inexperienced people usually start off as helpers on a contract basis or as junior field production operators. Depending on the company, there may be different categories of helpers or junior operators. After individuals have sufficient on-the-job experience and have completed additional courses from the company or other sources, they may move into the position of operator.

From field production operator positions, individuals with initiative may be able to work toward supervisory or management positions in the company. With additional technical education or training, they may become:

- gas plant operators
- petroleum process operators
- well servicing supervisors
- gaugers on a pipeline.

Field production operators are part of the larger National Occupational Classification 9232: Petroleum, Gas and Chemical Process Operators. In Alberta, over 75 per cent of people employed in this classification work in the **Oil and Gas Extraction** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Oil and Gas Extraction industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 7,000 Albertans are employed in the Petroleum, Gas and Chemical Process Operators occupational group, which is expected to grow 2.2 to 3.2 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 150 to 230 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since field production operators form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for field production operators.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Petroleum, Gas and Chemical Process Operators occupational group working part-time or full-time earned from **$35,400 to $115,000 a year.** The average salary was **$77,900 a year.**

Salaries for field production operators are generally at the low end of this range.

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Related Occupational Profiles

Gas Pipeline Operators and Maintenance Workers
Oil Pipeline Operators and Maintenance Workers
Refinery/Upgrader Process Operator

Related High School Subjects

Community Health; Electro-Technologies; Energy and Mines; Language Arts; Logistics; Mathematics; Mechanics; Physical Education; Science (Chemistry; and Physics); and Wildlife

Related Post-Secondary Fields of Study

Trades, Industrial and Related Training

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Film Director

Produced OCTOBER 2003

Film directors develop an artistic vision for a film production and work with others to implement that vision.

NOC Number(s): 5131.2
Minimum Education: 4 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: I D S

Duties

Film directors are responsible for making shows come alive on screen. They may work in genres such as dramatic feature films, television programs, documentaries, training and promotional films, or animated shorts.

Some film directors are also producers. They help find financial backing for a film project and then recruit the technical crew and actors to produce it. If the producer and director are not the same person, the producer selects a director. It is an important decision because a director's reputation for successful films encourages investment capital and the involvement of quality actors and film craftspeople such as cinematographers and production crew members.

In pre-production, directors:

- meet with producers and screenwriters to discuss shots and changes to the script
- work with the art director to create or approve storyboards
- identify needed sets, props, costumes and locations
- consult with producers about hiring crew (e.g. art director, cinematographer, costume designer, production co-ordinator)
- consult with producers and casting directors about hiring cast members, holding auditions for speaking parts and contracting larger roles to actors considered right for the part
- consult with the cinematographer about desired mood, texture, contrasts and dominant colour and plan shots
- prepare a working budget and shooting schedule.

During production, directors work closely with actors and crew members to produce the best possible outcomes. For each shot, film directors communicate the approach they want for the scene, comment on characterization, explain the blocking and perhaps run through the scene once or twice before shooting the first take.

At the end of each day of shooting, directors and producers view the rushes (the day's work on film) to check the work in progress and make changes in future shoots. Because films are shot out of sequence, directors must visualize the "through-line" of the story and judge if the work is on track.

After filming is finished, directors may collaborate with producers, film editors, composers and sound editors as the film is edited and the soundtrack added. On feature films, directors may be asked to help promote films before they are released. This may involve touring major cities and participating in media interviews, talk shows and other public appearances.

Working Conditions

Hours of work for film directors are often long and irregular. They may work indoors or outdoors in all kinds of weather. Dealing with time pressures, budget limitations and creative responsibilities can be stressful.

Personal Characteristics

Film directors need the following characteristics:

- the ability to command respect
- the ability to visualize a finished product
- the communication and interpersonal skills required to work effectively with performers, artists and technicians,

and to develop a network of supporters and contacts
- a willingness to accept artistic, psychological and emotional risks
- the ability to work long days
- good time management skills.

They should enjoy being innovative, controlling and co-ordinating the work of others, and dealing with people.

Educational Requirements

There are **no standard education requirements** for film directors but most have related post-secondary education and experience. Many are experienced actors, editors or writers. (Sometimes, they wrote the play or film they are directing.) For information about related education options, see the Actor and Creative Writer occupational profiles.

Film directors need a good understanding of visual story-telling, photography and lighting as they relate to film making. Formal training in film making should also include theory, history and hands-on experience in production.

In Alberta, the following post-secondary institutions offer programs that are directly related to film production:

- **Mount Royal College** in Calgary offers a two year Broadcasting diploma program. The entrance requirement is a high school diploma. Keyboarding skills, a portfolio, departmental testing and an interview are also required.
- The **Northern Alberta Institute of Technology** in Edmonton offers a two year Radio and Television diploma program with specializations in radio and in television. The entrance requirement is a high school diploma or equivalent with at least 60 per cent in English 30 or 33, and at least 50 per cent in Grade 11 math, science and social studies (Grade 12 math, science and social studies recommended). This is a quota program and competition for admission is keen. A career investigation report is required.
- **Red Deer College** offers years three and four of a Bachelor of Applied Motion Picture Arts degree program. Students completing year three are eligible for an Advanced Certificate. Entrance requirements include two years of an acceptable post-secondary program with a grade point average of at least 65 per cent (or approved experience) and an audition or interview.
- The **Southern Alberta Institute of Technology** in Calgary offers a two year Cinema, Television, Stage and Radio diploma program with specializations in broadcast news, film/video, radio and television. The entrance requirement is a high school diploma or equivalent with at least 60 per cent in English 30 or 33. Typing skills are essential. A resume/portfolio, research paper and an interview may be required.

During the summer months, **Banff Centre for the Arts** offers a variety of courses, workshops and residencies designed for people who already have some related education or experience. The **National Screen Institute** in Edmonton also offers training opportunities and workshops for individuals who have some professional experience in film direction, production or writing. The **Film and Video Arts Society** periodically offers courses in film directing and video directing.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

(section revised JANUARY 2006)

Film directors are generally hired on a contract basis to direct:

- government training films or videos
- educational films or videos
- commercials
- music and other videos
- travelogues
- nature films
- documentaries
- television dramas
- feature films.

The film industry is highly competitive and films are expensive to produce so producers are reluctant to hire inexperienced directors. Many years of related experience are usually required before aspiring directors are given full responsibility for directing a film. To gain experience, they may produce projects themselves by financing them personally or through arts grants, and enter their work in film festivals to build their reputations.

Film directors are part of the larger National Occupational Classification 5131: Producers, Directors, Choreographers and

Related Occupations. In Alberta, most people employed in this classification work in the **Information, Culture and Recreation** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Information, Culture and Recreation industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 1,950 Albertans are employed in the Producers, Directors, Choreographers and Related Occupations group which is expected to grow 1.2 to 2.2 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 20 to 50 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since film directors form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for film directors.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Film directors' incomes vary considerably from one director to another and from one year to another, depending on the director's reputation and the economy. Some film directors work at other jobs and finance their own projects. Directors who work on a contract basis negotiate their fees before production begins. In some cases, **Directors' Guild** guidelines may apply.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Producers, Directors, Choreographers and Related Occupations group working part-time or full-time earned from **$16,200 to $108,800 a year.** The average salary was **$46,800 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Canadian Film Centre website: www.cdnfilmcentre.com

Cultural Human Resources Council website: www.culturalhrc.ca

Directors' Guild of Canada website: www.dgc.ca

Film and Video Arts Society website: fava.ca

Film Studies Association of Canada website: www.film.queensu.ca/FSAC

National Film Board of Canada website: www.nfb.ca

National Screen Institute website: www.nsi-canada.ca

Related Occupational Profiles

Casting Director
Cinematographer
Producer - Film, Radio, Television and Theatre
Theatre Director

Related High School Subjects

Communication Technology; Financial Management; Fine Arts (Drama; and Visual Arts); Language Arts; Logistics; Management and Marketing; Mathematics; Science; and Social Studies

Related Post-Secondary Fields of Study

Communications; Fine Arts and Performing Arts; and Humanities and Languages

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Financial Analyst

Produced NOVEMBER 2005

Financial analysts collect, evaluate and apply financial, economic and statistical data to analyze and evaluate investment opportunities, or make financial decisions and recommendations.

NOC Number(s): 1112.1
Minimum Education: 4 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **M I d**

Duties

In general, financial analysts:

- define possible risks and potential returns from investments
- make recommendations regarding investments that will help clients reach their financial goals
- evaluate the securities of companies (which includes estimating the future earning power of each company).

In **securities firms**, financial analysts:

- study mainly public companies
- prepare reports for stockbrokers, institutional investors and retail clients
- actively market their recommendations to in-house salespeople and external clients
- work with investment bankers to attract new corporate clients.

Most analysts specialize in specific industries or segments of the market.

In **large institutions** such as banks, pension funds and governments, financial analysts may:

- monitor national and international stock and bond markets
- monitor national and international economic conditions
- follow major Canadian and international industries such as oil and gas, forestry, banking, mining and telecommunications
- conduct in-depth studies of companies or investment opportunities relevant to the requirements of their organizations.

They usually specialize in stock, bond or real estate markets. They often prepare reports for fund managers that recommend how funds ranging from millions of dollars to hundreds of millions of dollars should be invested.

Working Conditions

Financial analysts work long hours in an office environment under constant pressure to meet deadlines. The work is intense and detail oriented, and often involves working with computers and custom-designed software. Some travel may be required.

Personal Characteristics

Financial analysts need the following characteristics:

- the analytical skills required to conduct thorough, objective research and make recommendations regarding investment decisions
- the ability to present their findings effectively
- good time management skills and the ability to deal with frequent interruptions
- high ethical standards
- good communication skills.

They should enjoy taking a methodical approach to collecting information, analyzing problems and finding innovative solutions, consulting with people and directing the work of others.

Educational Requirements

Most employers require prospective analysts to have several years of relevant work experience and at least one university degree. Preference may be given to applicants who have completed a finance-related program and an industry-related program. For example, a degree in geology or petroleum engineering is an asset for analysts working in the oil and gas industry.

Most employers encourage or require their junior analysts to complete the Chartered Financial Analyst program offered through the **Association for Investment Management and Research**.

In Alberta, the following post-secondary institutions offer finance-related degree programs:

- **Athabasca University**, which has an open admissions policy, offers four year Bachelor of Commerce and Masters in Business Administration (MBA)programs via distance education.
- **Concordia University College of Alberta** in Edmonton offers a four year Bachelor of Management degree program.
- **Grande Prairie Regional College** offers a four year Bachelor of Commerce degree program in collaboration with Athabasca University. Grande Prairie Regional College provides the classroom study and the degree is granted through Athabasca University.
- **The King's University College** in Edmonton offers a four year Bachelor of Commerce degree program.
- **Lakeland College** in Vermilion offer a Bachelor of Applied Financial Services degree program. The entrance requirement is successful completion of a two year diploma in Business Administration.
- **Mount Royal College** in Calgary offers a Bachelor of Applied Financial Services degree program. The entrance requirement is successful completion of a two year diploma in Business Administration.
- The **Northern Alberta Institute of Technology (NAIT)** in Edmonton offers a Bachelor of Applied Business Administration - Finance degree program. The entrance requirement is successful completion of a two year diploma in Business Administration with specified courses and a minimum GPA of 65 per cent, 2.3, 6 or C+.
- The **University of Alberta** in Edmonton offers four year and five year (co-op) Bachelor of Commerce degree programs and MBA programs with a specialization in finance. The entrance requirement for the bachelor's degree program is a pre-professional year with specific courses.
- The **University of Calgary** Haskayne School of Business offers four year and five year (co-op) Bachelor of Commerce and MBA programs with specializations in finance.
- The **University of Lethbridge** offers a four year Bachelor of Management degree program and post-diploma programs with a specialization in finance.

One and two year university transfer programs are offered by post-secondary institutions throughout the province.

First year admission requirements for university and university transfer programs vary from one institution to another but generally include a high school diploma (or equivalent) with a competitive average of at least 60 per cent (over 70 per cent for some programs) in English Language Arts 30-1 (or English 30), Pure Math 30 (or Math 30) and three other approved Grade 12 subjects.

Two year financial planning or services diploma programs are offered by the following Alberta post-secondary institutions:

- **Lakeland College** in Vermilion
- **Medicine Hat College**
- **Northern Alberta Institute of Technology (NAIT)** in Edmonton
- **Red Deer College**.

Business administration and management programs are offered by:

- **Alliance University College** in Calgary
- **Athabasca University**
- **Canadian University College** in College Heights
- **Grande Prairie Regional College**
- **Keyano College** in Fort McMurray
- **The King's University College** in Edmonton
- **Lakeland College** in Vermilion and Lloydminster
- **Lethbridge Community College**
- **Medicine Hat College** in Medicine Hat and Brooks
- **Mount Royal College** in Calgary
- the **Northern Alberta Institute of Technology (NAIT)** in Edmonton and at various locations

- **Northern Lakes College** in Grouard and other locations
- **Portage College** in Lac La Biche
- **Red Deer College**
- the **Southern Alberta Institute of Technology (SAIT)** in Calgary.

Minimum admission requirements for financial planning and business administration programs vary but generally include a high school diploma with a specified minimum average or minimum marks in particular courses (e.g. Grade 12 English).

Continuing education programs are often offered on an as needed basis.

For current information on programs and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

(section revised JANUARY 2006)

Financial analysts are generally employed in the head offices of:

- securities firms
- investment banking firms
- banks
- trust companies
- governments
- insurance companies
- mutual and pension funds
- accounting firms
- investment counselling firms.

Foundations, educational institutions and, in some cases, corporations with substantial amounts of their own money to invest also may employ financial analysts.

Most financial analysts employed by investment firms work in head offices which are often located in Central Canada. Many of the analysts employed in Alberta work in energy sector head offices in Calgary. Some experienced financial analysts are self-employed and act as private consultants.

Financial analysts are part of the larger National Occupational Classification 1112: Financial and Investment Analysts. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Finance, Insurance and Real Estate**
- **Professional and Technical Services**
- **Oil and Gas Extraction**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 3,350 Albertans are employed in the Financial and Investment Analysts occupational group which is expected to grow 1.7 to 2.7 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 50 to 100 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since financial analysts form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for financial analysts.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Salaries for financial analysts vary greatly depending on the analyst's responsibilities and qualifications, and the type of employer. Bonuses for senior analysts in securities firms can increase their incomes substantially.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Financial and Investment Analysts occupational group working part-time or full-time earned from **$22,900 to $119,400 a year.** The average salary was **$61,400 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Association of Investment Management and Research (AIMR) website: www.aimr.com

Canadian Securities Institute (CSI) website: www.csi.ca

Investment Dealers Association (IDA) website: www.ida.ca

Related Occupational Profiles

Banking/Investment Manager
Financial Planner
Investment Advisor
Investment Underwriter
Operations Research Analyst

Related High School Subjects

Enterprise and Innovation; Financial Management; Information Processing; Language Arts; Management and Marketing; Mathematics; and Social Studies

Related Post-Secondary Fields of Study

Agriculture and Related Technologies; Business, Management and Administrative Studies; Communications; Computer and Information Technology; Engineering, Architecture and Related Studies; Environment, Forestry and Related Studies; Health Care and Medical Sciences; Mathematics; and Sciences

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For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Financial Customer Service Representative

Produced OCTOBER 2005

Financial customer service representatives promote their financial institution's products and services, open and close accounts, keep records of transactions, accept payments, and receive and pay out money.

NOC Number(s): 1433
Minimum Education: High school diploma
Employment Outlook: Employment turnover plus below average occupational growth in Alberta
Interests: **M S o**

Duties

For simplicity, financial customer service representatives are called tellers for the remainder of this profile. Duties vary from one employer to another but, in general, tellers:

- promote the institution's products and services at every possible opportunity
- handle transactions for current accounts (savings accounts, personal chequing accounts)
- sell foreign currency, traveller's cheques, money orders and drafts
- guard against loss (e.g. from fraud or impersonation)
- use machines to count the daily supply of cash.

They also may:

- process term deposits, retirement savings plan contributions, automated teller transactions, night deposits or mail deposits
- sell various financial products
- refer customers interested in more complicated or detailed products such as investments and loans to financial service representatives.

When customers wish to deposit or withdraw money, tellers enter transaction information on computer terminals which automatically confirm transactions and make the necessary entries in the customer's account record. They must make sure that cheques are valid and authentic before processing transactions.

At the end of each working day, tellers may be required to balance cash holdings to ensure against errors. When debits and credits do not balance, they must search through the day's transactions to find their mistakes.

Working Conditions

Tellers' hours vary from limited part-time to full-time; most tellers work part-time. Employment in some branches may include working evenings and Saturdays.

Tellers may be on their feet for most of the working day. The work can be stressful during busy periods.

Personal Characteristics

Tellers need the following characteristics:

- good communication skills
- the ability to consistently serve customers accurately, efficiently and courteously even when there is a long line of people waiting
- empathy (perceptive and sensitive to the feelings and attitudes of others)
- the flexibility required to work effectively in a variety of situations and adapt to new ways of doing things
- the ability to keep customer information confidential
- the ability to work effectively in a team environment.

They should enjoy having clear rules and organized methods to guide their activities, working with the public, and operating computers and other business machines.

Educational Requirements

The minimum education requirement is a high school diploma but employers generally prefer to hire applicants who have some post-secondary education. Related experience in banking, retail sales or positions with a high degree of customer contact is a definite asset. During the three to six month on-the-job training period, trainees must meet specific standards of performance to become permanent employees.

The **Northern Alberta Institute of Technology (NAIT)** in Edmonton offers a one year Applied Banking and Business certificate program. The entrance requirement is a high school diploma or equivalent, including English Language Arts 30-1 or 30-2 (or English 30 or 33) and Pure or Applied Math 20 (or Math 20 or 23).

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

(section revised JANUARY 2006)

Tellers are employed by financial institutions such as chartered banks, credit unions and trust companies.

With experience, tellers can often move into other sales positions or departments. Many banks provide funds to help their employees further their education on a part-time basis, provide in-house training programs and allow employees to transfer from one branch to another to broaden their background knowledge and advance to more senior positions.

Tellers are part of the larger National Occupational Classification 1433: Customer Service Representatives - Financial Services. In Alberta, most people employed in this classification work in the **Finance, Insurance and Real Estate** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Finance, Insurance and Real Estate industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 12,250 Albertans are employed in the Customer Service Representatives - Financial Services occupational group which is expected to grow 0.8 to 1.8 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 90 to 230 **new** positions will be created each year **in addition** to job openings created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Customer Service Representatives - Financial Services occupational group working part-time or full-time earned from **$15,500 to $121,200 a year.** The average salary was **$30,900 a year.**

Other Sources of Information

Post-secondary institution calendar or website (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Related Occupational Profiles

Banking/Investment Manager
Cashier

Related High School Subjects

Language Arts; Management and Marketing; and Mathematics

Related Post-Secondary Fields of Study

Business, Management and Administrative Studies; Clerical and Administrative Support; and Personal and Food Services

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For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Financial Planner

Produced OCTOBER 2005

Financial planners develop personal financial plans for individuals and families. They analyze clients' net worth, financial resources, lifestyle preferences and goals, and make recommendations regarding how clients can achieve their financial goals.

NOC Number(s): 1114.1
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **M I D**

Duties

In general, financial planners:

- help clients gather information from bank account records, income tax returns, life and disability insurance records, pension plan information and wills
- help clients calculate their net worth
- help clients identify personal and financial goals and objectives
- explain and compare financial products
- make recommendations regarding how clients can achieve their financial goals and objectives
- help clients implement plans or refer them to other financial services or professionals
- build and maintain a client base by keeping current client plans up-to-date and recruiting new clients on an ongoing basis
- meet with financial product representatives
- maintain detailed client files.

Self-employed financial planners may charge fees for their services, earn commissions on the products they sell, or both.

- **Fee for service planners** base their fees on the value of the client's assets or on an hourly rate. Their recommendations may include suggestions that clients buy particular products or referrals to other professionals (accountants, lawyers, investment representatives) or institutions (e.g. lending institutions). Clients may implement financial plans themselves.
- **Commission planners** receive commissions for selling specific financial products. Their recommendations may include suggestions that clients buy particular products or referrals to other professionals or institutions.

Some financial planners also conduct seminars and workshops on:

- general financial planning
- pre-retirement planning
- estate planning
- understanding severance packages.

Financial planners also may write a column for a newspaper, or appear on television or radio shows to offer their financial suggestions.

Working Conditions

Financial planners may work alone or with others in fully equipped offices or out of their homes. Many financial planners travel to meetings at clients' homes or businesses. They may work evenings and weekends as well as regular office hours.

Personal Characteristics

Financial planners need the following characteristics:

- good listening and communication skills
- respect for client confidentiality
- the ability to understand complex financial documents such as wills, insurance policies, pension plans, financial statements and tax regulations
- entrepreneurial and business marketing skills
- a willingness to keep up to date and consider new approaches to problem-solving
- the ability to balance their clients' interests with their range of services
- confidence in their knowledge and suggestions.

They should enjoy taking a methodical approach to gathering information, analyzing information and finding innovative solutions to problems, consulting with people and directing their activities.

Educational Requirements

(section revised FEBRUARY 2006)

There are no standard education requirements in this occupation. Many financial planners have completed related courses such as the **Canadian Securities Course** and the **Canadian Investment Funds Course**.

In Alberta, financial planning programs are offered by the following post-secondary institutions:

- **Grande Prairie Regional College** offers the Canadian Securities Course.
- **Lakeland College** in Vermilion offers a two year Financial Services diploma program and a Bachelor of Applied Financial Services applied degree program. The entrance requirement for the diploma program is a high school diploma with English Language Arts 30-1 (or English 30 or 65 per cent in ELA 30-2 or English 33) and 55 per cent in Pure Math 30 (or Math 30 or 65 per cent in Applied Math 30 or Math 33). The entrance requirement for the degree program is successful completion of a two year diploma in Business Administration.
- **Medicine Hat College** offers a two year Financial Services and Planning diploma program. The entrance requirement is a high school diploma with Grade 12 English and math.
- **Mount Royal College** in Calgary offers the Canadian Investment Funds program, Canadian Securities Course (Exam Preparation), the Certified Financial Planner (FPSC) program and an exam preparation course through Continuing Education. Applicants must be at least 18 years of age. The College also offers a four year applied degree Financial Services program. The entrance requirement is a high school diploma with English Language Arts 30-1 and Pure Math 30.
- **Northern Alberta Institute of Technology (NAIT)** in Edmonton offers a two year Finance diploma program, a Bachelor of Applied Business - Finance applied degree. The Bachelor degree program includes four courses required for the Certified Financial Planners designation and the Canadian Securities course. Students may apply for the Finance diploma program after completing the first year of the Business Administration program or for the Bachelor degree program after completing a related two year diploma program. The entrance requirement for the Business Administration program is a high school diploma with at least 60 per cent in English Language Arts 30-1 or 30-2 and Applied or Pure Math 30, or equivalent.
- **Red Deer College** offers a two year Financial Services diploma program. The entrance requirement is a high school diploma with an average of 60 per cent in English Language Arts 30-1 or English 30 and Pure Math 30 or Math 30 (or 65 per cent in ELA 30-2 or English 33 and Applied Math 30 or Math 33), or equivalent.
- **University of Calgary** offers a six course Certified Financial Planner program through Continuing Education and a four year Bachelor of Commerce degree in Finance. The entrance requirement for the degree program is a competitive average in English 30, Pure Math 30 and three of the following: Math 31, Social Studies 30, Biology 30, Chemistry 30, Physics 30, Science 30, a 30 level language other than English, one other five credit Grade 12 subject.
- **University of Lethbridge** offers a 10 semester course certificate, a two year post-diploma Bachelor of Management degree program and Bachelor of Management degree programs in Finance. The entrance requirement is a an average of 65 per cent in English Language Arts 30-1 (or English 30), Pure Math 30 (or Math 30), two other 30-level subjects and one approved Grade 12 subject.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Accountants, lawyers and other professionals may provide different aspects of financial planning guidance. For more information, see the appropriate occupational profiles (e.g. Accountant, Investment Advisor, Lawyer).

Other Requirements

The **Financial Planners Standards Council (FPSC)** offers the Certified Financial Planner (CFP) credential to applicants who:

- have successfully completed an accredited education program
- have two years of work experience in a position related to financial planning
- adhere to the Council's Code of Ethics
- have successfully completed the CFP Examination.

An education program may be taken by attending classes at designated universities and colleges, by distance education or via the Internet. There are no minimum admission requirements but experience in the financial industry is recommended. To maintain their standing as a CFP licensee, planners must take at least 30 hours of continuing education each year.

The **Canadian Securities Institute** offers the Financial Management Advisor (FMA) designation to applicants who have completed the Canadian Securities Course, Professional Financial Planning Course and Wealth Management Techniques Course.

Employment and Advancement

(section revised JANUARY 2006)

Some financial planners are employed by small financial planning businesses or are self-employed. Others are employed on a full-time basis or contract their services to larger firms and organizations such as:

- trust companies
- banks and other lending institutions
- stock brokerage firms
- insurance agencies
- legal firms
- accounting firms
- mutual fund companies
- private financial planning companies.

Experienced financial planners may specialize in a particular aspect of financial planning (e.g. retirement planning or wealth management) or move into supervisory or management positions in larger companies or professional associations.

Financial planners are part of the larger National Occupational Classification 1114: Other Financial Officers. In Alberta, over 75 per cent of people employed in this classification work in the **Finance, Insurance and Real Estate** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Finance, Insurance and Real Estate industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 7,850 Albertans are employed in the Other Financial Officers occupational group which is expected to grow 1.7 to 2.7 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 130 to 220 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since financial planners form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for financial planners.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Self-employed financial planners may earn the majority of their income by charging fees for their services (preparing individual financial plans, speaking at conferences, leading seminars and workshops) or earning commissions on financial products sold.

According to the **2005 Alberta Wage and Salary Survey**, Albertans with three years of experience working part-time or full-time in the Other Financial Officers occupational group earned **up to $145,400 a year.** The average salary was **$74,600 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

ADVOCIS (Financial Advisors Association of Canada) website: www.advocis.ca

Canadian Institute of Financial Planning (CIFP) and Investment Funds Institute of Canada (IFIC) distance learning website: www.ifse.ca

Canadian Securities Institute (CSI) website: www.csi.ca

Financial Planners Standards Council (FPSC) website: www.cfp-ca.org

Related Occupational Profiles

Accounting Technician
Banking/Investment Manager
Financial Analyst
Insurance Agent/Broker
Investment Advisor

Related High School Subjects

Communication Technology; Enterprise and Innovation; Financial Management; Language Arts; Legal Studies; Management and Marketing; Mathematics; and Social Studies

Related Post-Secondary Fields of Study

Business, Management and Administrative Studies

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Firefighter

Produced MAY 2003

Firefighters provide pre-hospital care and protect the public from the dangers of fire and other hazards by controlling and extinguishing fires, rescuing people, responding to dangerous goods incidents, maintaining equipment and practicing fire prevention.

NOC Number(s): 6262
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus below average occupational growth in Alberta
Interests: **O M D**

Duties

Firefighters are trained to promote safety and respond quickly and efficiently to situations that may endanger citizens or their property (eg. fires, motor vehicle accidents, hazardous goods spills). They provide medical aid, rescue services, and property and environmental loss control services.

When there is a fire, firefighters:

- establish water supply
- lay out and connect hoses and nozzles, and direct water onto fires
- forcibly enter burning buildings
- manage and control ladders used to gain access to fires and help people to safety
- provide pre-hospital care for fire victims who may be injured or overcome by smoke or gas
- salvage property (when appropriate) during or after fire fighting operations
- inspect the site of a blaze once it has been extinguished, to make sure that no dangers still exist
- use various chemicals to combat different types of fires
- deal with any hazardous chemicals which may catch fire or spill.

When there are other types of emergencies, firefighters:

- provide rescue services and medical attention for all involved in the incident
- minimize property loss and environmental impact
- work with or write cause and determination reports for the proper authorities.

Between emergencies, firefighters:

- participate in public education and fire prevention activities
- conduct fire inspection and preplanning activities
- maintain their equipment
- maintain their skills and learn new ones.

Working Conditions

Firefighters in large centres work shifts with rotating days off. In smaller centres, they may work part-time and/or be on call.

The work is physically demanding, often involving short periods of intense physical labour, and is sometimes dangerous. Firefighters must wear heavy gear while working in environments which include smoke, high temperatures and cold termperatures. The work is also emotionally demanding because there is an element of emotional stress in most emergency situations.

Lifting over 25 kilograms is sometimes required.

Personal Characteristics

Firefighters must be:

- in top physical condition because their job requires agility, endurance and strength
- able to give and take orders and function well in a team environment.

They should enjoy working with tools, equipment and machinery, having clear rules and organized methods and talking to people about fire prevention.

Educational Requirements

(section revised AUGUST 2005)

The requirements for employment as a firefighter vary from one fire department to another. For example, minimum education requirements range from Grade 10 to a high school diploma with specified courses in physics, math and chemistry. Other requirements may include:

- at least 18 years of age
- Canadian citizenship or equivalent status
- 20/30 vision without glasses and no abnormalities in colour vision
- a valid Class 5 Alberta Motor Vehicle Operator's Licence without restrictions and the ability to acquire an Alberta Class 3 and air brake licence prior to employment
- training or experience in related technologies or trades, first aid or rescue work
- a better than average ability to get along with people
- the ability to climb great heights and withstand extreme cold and intense heat
- the ability to perform under great stress
- successful completion of accredited fire protection courses
- medical emergency training (for more information, see the Emergency Medical Responder, Emergency Medical Technologist - Ambulance and Emergency Medical Technologist - Paramedic occupational profiles).

Depending on the fire department, firefighters may take a training course varying in length from six to twelve weeks after they are employed. The minimum mark required to pass the examination at the end of the course is 70 per cent. Afterward, there is a probationary period (six months to one year) working in a fire station.

Competition for firefighter positions is keen, particularly in large urban centres. Selection procedures include aptitude tests, fitness tests, medical examinations, security and reference checks and personal interviews. Related experience or training is an asset. The following four organizations work together to offer training programs:

- **Lakeland College** in Vermilion offers a Fire Service Training program. Courses vary in length from four to 24 weeks. Applicants must be at least 18 years of age and be physically fit. Lakeland College also offers a 46-week Emergency Services Technology program. Applicants must be 18 years of age, have a valid Class 5 driver's licence with Q endorsement, a Standard First Aid Certificate and CPR Level C, and a high school diploma with English 30 (or 65 per cent in English 33). It is strongly recommended that applicants obtain the Emergency Medical Responder certificate and have some background in fire or medical participation. A resume, a physical fitness assessment, a clear criminal record check, a personal interview, an aptitude test and a First Aid/CPR knowledge test are also required.
- **Lethbridge Community College** offers a Fire Investigation and Prevention program for First Class Firefighters and members of volunteer fire departments who have equivalent certification from the Fire Commissioner (or Deputy).
- The **Southern Alberta Institute of Technology** in Calgary offers a 46-week Emergency Service Technician program. Admission requirements are the same as those for the Emergency Services program at Lakeland College.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

(section revised JANUARY 2006)

Firefighters may be employed full-time by city fire departments or part-time in smaller centres.

Firefighters who have the necessary experience, seniority and abilities may advance to positions such as team specialist, fire chief, fire captain, fire inspector or fire safety inspector.

In Alberta, most people employed as firefighters work in the **Public Administration** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Public Administration industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 2,450 Albertans are employed in the Firefighters occupational group which is expected to grow 0.8 to 1.8 per cent each year from 2005 to 2019 in Alberta. It is forecasted that 10 to 50 **new** positions will be created each year **in addition** to job openings created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Firefighters occupational group working part-time or full-time earned from **$21,300 to $80,800 a year.** The average salary was **$59,700 a year.**

Salaries at the top of this range are for senior officers who have management responsibilities. All protective clothing and equipment are supplied.

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

fire etc. website: www.afts.ab.ca

Related Occupational Profiles

Canadian Forces Personnel - Non Commissioned
Emergency Medical Responder
Emergency Medical Technician - Ambulance
Emergency Medical Technologist - Paramedic
Wildland Firefighter

Related High School Subjects

Community Health; Enterprise and Innovation; Language Arts; Logistics; Physical Education; and Science (Biology; Chemistry; and Physics)

Related Post-Secondary Fields of Study

Driver Training; and Social, Community and Protective Services

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For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Fish and Wildlife Officer

Produced JANUARY 2006

Fish and wildlife officers protect, preserve and manage fish and wildlife resources.

NOC Number(s): 2224
Minimum Education: 3 years post-secondary education/training
Employment Outlook: Employment turnover plus below average occupational growth in Alberta
Interests: **D M S**

Duties

Duties and responsibilities vary from one position to another but, in general, fish and wildlife officers:

- patrol geographic areas to monitor the activities of hunters, anglers, trappers, commercial fishers and industry
- enforce federal and provincial laws, regulations, rules and orders relating to fish and wildlife resources
- provide information and answer questions from hunters, anglers, trappers, commercial fishers, landowners, students, industry and the media
- investigate complaints, apprehend violators, prepare administrative and court documents, issue summonses and warnings, and prepare and present evidence in court
- investigate complaints about nuisance and problem wildlife, take appropriate control measures and advise landowners and industry about effective wildlife control measures they can implement on their own
- deliver public service programs such as presentations in schools and at sport club meetings
- co-operate with wildlife researchers and collect related data (for example, conduct wildlife inventories or collect samples to assist with natural resource research)
- maintain government issue equipment
- recommend changes or amendments to legislation and regulations, and hunting/fishing seasons and methods of harvest
- issue licenses and permits, or provide information to licensing agents
- inspect commercial operations (taxidermy shops, furriers, tanners, outfitters/guides, game bird farms).

Fish and wildlife officers work closely with other agencies, non-governmental organizations and delegated administrative authorities operating on the same landbase in the province. On occasion, they may be called upon to assist other local law enforcement agencies.

Working Conditions

Fish and wildlife officers work in a wide variety of environments outdoors and indoors. Travel is required, sometimes by unusual modes of transport such as canoe, snowmobile or horseback. Most officers live and work in rural communities; some work in wilderness areas that have few modern conveniences. Lifting items weighing up to 10 kilograms is routinely required.

Hours of work include weekends and holidays, and may include night shifts or split shifts. Overtime may be required to respond to violations or events involving serious conflict between humans and wildlife.

Personal Characteristics

Fish and wildlife officers need the following characteristics:

- an interest in nature and genuine concern for the environment
- good health and physical conditioning
- the ability to handle periods of isolation
- strong oral and written communication skills
- tact, diplomacy and the ability to deal effectively with difficult people and situations

- excellent problem solving skills.

They should enjoy conducting patrols, compiling information, gathering data and samples, and working with people.

Educational Requirements

The minimum education requirement for fish and wildlife officers is a two year resource management diploma plus a one year conservation law certificate. Preference is given to candidates who have a four year applied degree in conservation enforcement. Applicants also must have the following qualifications:

- at least eight to twelve months of directly related experience
- a valid driver's license
- a clean criminal record.

Computer skills are a definite asset.

After job applications have been screened, there are three more stages in the candidate selection process:

- a personal interview
- an in-depth background or reference check
- comprehensive vision, hearing, medical and psychological evaluations.

Successful candidates receive 20 weeks of in-house training.

In Alberta, the following post-secondary institutions offer conservation enforcement programs.

- **Lakeland College** in Vermilion offers a two year Environmental Protection Technology diploma program. The entrance requirement is a high school diploma with English Language Arts 30-1 (or English 30, or 65 per cent in ELA 30-2 or English 33), Chemistry 30, Biology 30 and Pure Math 30 (or Math 30, or 65 per cent in Applied Math 30 or Math 33).
- **Lethbridge Community College** offers a four year Bachelor of Applied Conservation Enforcement degree program. The entrance requirement is a high school diploma with a 60 per cent average in English Language Arts 30-1 (or English 30), Pure or Applied Math 30, Biology 30, Chemistry 20 and Social Studies 30. Medicine Hat College also offers the first year of this program.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

In Alberta, fish and wildlife officers are employed by **Alberta Sustainable Resource Development**. They may be posted to any of 61 districts in the province and are usually transferred at least once during their first years of employment.

After three years of employment, fish and wildlife officers may advance to district fish and wildlife officer positions. District officers are in charge of an assigned district and operate independently.

Fish and wildlife officers are part of the larger National Occupational Classification 2224: Conservation and Fishery Officers. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Public Administration**
- **Forestry and Logging**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 600 Albertans are employed in the Conservation and Fishery Officers occupational group which is expected to grow 0.5 to 1.5 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover. (**Note**: Since fish and wildlife officers officers form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for fish and wildlife officers.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Conservation and Fishery Officers occupational group working part-time or full-time earned from **$35,900 to $55,700 a year.** The average salary was **$51,400 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Related Occupational Profiles

Biologist
Bylaw Enforcement Officer
Conservation Officer
Police Officer

Related High School Subjects

Communication Technology; Forestry; Information Processing; Language Arts; Legal Studies; Mathematics; Physical Education; Science (Biology; and Chemistry); Social Studies; Tourism Studies; and Wildlife

Related Post-Secondary Fields of Study

Environment, Forestry and Related Studies

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Fitness Instructor

Produced MARCH 2005

Fitness instructors promote exercise as a healthy lifestyle choice and teach students, privately or in groups, strengthening, endurance, aerobic, flexibility or weight training exercises.

NOC Number(s): 5254
Minimum Education: High school diploma
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: **M S i**

Duties

Duties vary depending on the type of exercises fitness instructors teach but, in general, instructors:

- evaluate students' abilities and needs
- determine suitable training programs
- demonstrate correct exercise methods and proper use of exercise equipment
- ensure students exercise safely
- teach proper breathing techniques
- lead students through exercise routines
- monitor students' progress and adapt programs as needed
- provide resources to students regarding nutrition, weight control and lifestyle issues
- develop programs for people who have special requirements.

Fitness instructors who teach group classes also:

- plan routines and choose appropriate music
- choose different movements for each set of muscles depending on participants' capabilities and limitations
- help participants gauge their levels of exertion to get the maximum benefit from their exercise routines
- offer alternatives during classes to accommodate different levels of fitness.

Fitness instructors who work for health clubs may have additional responsibilities such as:

- recording member information
- promoting the club through membership sales
- teaching and demonstrating the use of equipment such as weights and mechanical exercise equipment
- maintaining equipment
- advising clients about proper clothing and shoes.

Working Conditions

Fitness instructors may work in a variety of surroundings. Clubs usually have separate showers and lockers for instructors, mirror-lined walls and special flooring designed to reduce injuries such as shin splints. These amenities may not be available in community facilities. Appropriate footwear, equipment and clothing can be expensive but in some settings clean, comfortable, casual clothing is acceptable.

The work is physically and mentally demanding. Fitness instructors are constantly moving while coaching and giving instructions out loud. They are responsible for the safety of the class and must ensure that all participants are performing the exercises correctly to prevent injury.

Noon hour, evening and weekend work is common. Fitness instructors spend a considerable amount of their own time preparing for classes.

Personal Characteristics

Fitness instructors need the following characteristics:

- physically fit and well co-ordinated
- patient, approachable and enthusiastic
- excellent oral communication skills
- good sense of rhythm
- able to motivate students
- able to work with a minimum of supervision.

They should enjoy having clear rules and organized methods, dealing with people and designing new programs.

Educational Requirements

Most employers prefer to hire fitness instructors who have a high school diploma and, although not required by law, certification from the Alberta Fitness Leadership Certification Association (AFLCA). Some employers require employees to have related post-secondary education as well.

To qualify for AFLCA certification, fitness instructors must:

- successfully complete a Fitness Theory course (minimum of 16 hours)
- successfully complete specialty training in an area such as group exercise, aquatic exercise, resistence training or fitness for older adults (minimum 16 hours)
- hold current certification in cardiopulmonary resuscitation (CPR)
- complete seven hours of practical teaching
- complete a practical observation by an AFLCA certified trainer.

Fitness Theory training and specialty courses are offered by a variety of agencies throughout the province. They may be offered by:

- the AFLCA
- the continuing education departments of post-secondary institutions
- YMCAs and YWCAs
- clubs.

CPR training is also available from:

- the continuing education departments of post-secondary institutions
- the Red Cross
- St. John's Ambulance
- recreational facilities.

To ensure that fitness instructors keep their skills and knowledge up to date, recertification is required every two years.

Some employers (e.g. YMCAs and YWCAs) provide their own in-house training and certification. Those holding YMCA/YWCA national certification can challenge AFLCA exams.

In Alberta, the following post-secondary institutions offers programs directly related to fitness training:

- **Grande Prairie Regional College** offers one year certificate and two year diploma programs in Fitness Leadership. The entrance requirement is an average of 60 per cent in English Language Arts 30-1, two humanities or science subjects, one science and one other 30 level subject. Applicants also must submit a letter of intent and have completed the AFLCA Fitness Theory course.
- **Mount Royal College** in Calgary offers a Personal Fitness Trainer certificate program that may be taken full-time (10 months) or part-time (minimum two years) by distance education. The program includes 13 courses and a 100 hour practicum. Applicants must have a high school diploma (or equivalent) including Biology 30.
- The **Northern Alberta Institute of Technology (NAIT)** in Edmonton offers a two year Personal Fitness Trainer diploma program. The entrance requirement is a high school diploma with English 30 or 33, a 30 level science (Biology 30 preferred) and Math 20 or 23 (or Pure or Applied Math 20).
- The **Professional Institute of Massage and Fitness**, a private vocational school in Calgary, offers a 22-week Personal Fitness Trainer program. The entrance requirement is a high school diploma or equivalent with a Grade 12 biology course. A medical examination is required.
- **Red Deer College** offers an two year Kinesiology and Sports Studies diploma program with a specialization in fitness and health promotion. The entrance requirement is an average of at least 60 per cent in English Language Arts 30-1 and four other approved 30 level subjects (Biology 30 recommended). Only one language other than English will be accepted.

For information about related degree programs, see the Kinesiologist and Recreation Co-ordinator/Supervisor occupational profiles. The AFLCA requires its fitness trainers (the people who train fitness instructors) to have a degree with fitness-related courses.

For current information about programs and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

(section revised JANUARY 2006)

Fitness instructors are employed by:

- private health clubs
- public gymnasiums
- retirement centres
- dance schools
- municipal recreation centres
- YMCAs and YWCAs
- community leagues
- large corporations
- resorts and hotels.

Many fitness instructors are employed on a contract basis for a specific class or number of classes. They may work for several employers at the same time.

Some fitness instructors teach as a second job to earn extra income or to maintain their own fitness. Some fitness instructors volunteer their services to community groups.

Fitness instructors employed by clubs may move into supervisory and management positions responsible for organizing classes. Some fitness instructors set up their own businesses.

Fitness instructors are part of the larger National Occupational Classification 5254: Program Leaders and Instructors in Recreation and Sport. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Information, Culture and Recreation**
- **Educational Services**
- **Public Administration**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 7,400 Albertans are employed in the Program Leaders and Instructors in Recreation and Sport occupational group which is expected to grow 2.5 to 3.5 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 180 to 260 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since fitness instructors form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for fitness instructors.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Fitness instructors' incomes vary greatly depending on their experience, the number of classes they teach, and the type of employer. Some fitness instructors are volunteers.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Program Leaders and Instructors in Recreation and Sport occupational group working part-time or full-time earned from **$9,800 to $61,400 a year.** The average salary was **$26,000 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Fitness Leadership Certification Association (AFLCA) and Provincial Fitness Unit website: www.provincialfitnessunit.ca/aflca.php

Related Occupational Profiles

Coach
Golf Professional
Professional Athlete
Recreation and Sport Administrator
Recreation Co-ordinator/Supervisor
Sports Instructor

Related High School Subjects

Communication Technology; Community Health; Enterprise and Innovation; Language Arts; Physical Education; and Science (Biology)

Related Post-Secondary Fields of Study

Physical Education and Recreation

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Flight Attendant

Produced OCTOBER 2003

Flight attendants are responsible for the on-board safety of airline passengers and crew members. They assist passengers and other crew members in emergency situations and offer a variety of services to passengers to make a trip as pleasant as possible.

NOC Number(s): 6432.1
Minimum Education: High school diploma
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **M S o**

Duties

Prior to take-off, flight attendants:

- ensure all emergency and safety equipment (fire extinguishers, oxygen bottle, first aid kits, etc.) is on board and functioning properly
- check the general condition of the aircraft cabin and ensure all the necessary supplies are on board
- meet with the captain for a briefing on flight conditions such as anticipated weather and planned altitudes
- check the number of passengers booked for the flight and find out if there are any passengers who need special help
- greet arriving passengers, check boarding passes and excessive carry-on baggage
- help passengers find their seats and ensure carry-on luggage is securely stowed
- do a passenger head count and advise the captain
- provide information about emergency exists and demonstrate safety features
- close entry door(s)
- ensure seat belts are properly fastened, no-smoking regulations are observed, table trays and chair backs are in an upright position and no passengers are wearing head sets
- secure latches in the galley, ensure lavatories are not occupied and advise the captain that the cabin is not occupied
- take designated seats for take off and review emergency procedures.

After take-off, flight attendants provide a variety of services to make the flight enjoyable for passengers. Types of service depend on flight duration, weather conditions, time of day and number of flight attendants. They may:

- distribute reading material and headphones
- offer beverages and snacks from a tray or trolley (or serve meals on longer flights)
- answer questions about the flight
- make announcements (e.g. regarding turbulence, descent preparations)
- provide services for the safety and comfort of the passengers (e.g. check seat-belts during turbulence)
- prepare aircraft and passengers for landing (e.g. stow galley equipment).

After passengers have left the aircraft, flight attendants tidy the cabin and check for articles left behind.

The lead flight attendant, sometimes called the purser or in-charge, is usually required to submit flight paper work. Flight attendants often spend up to half of their working hours preparing the cabin for flight, writing reports and doing other related work on the ground.

Working Conditions

Flight attendants work in a cramped, noisy working environment and their work can be physically demanding. They spend most of a flight on their feet, move heavy galley equipment, and routinely lift items weighing up to 25 kilograms. They cannot work if they are congested due to the risk of damage to their ear drums. They are sometimes exposed to dangerous situations.

Hours of work are irregular and duty time can be long, up to fourteen hours. Flight attendants who work for large carriers may be away from their homes a considerable amount of time, depending on airline routes. They may experience short layover times and jet lag from time zone adjustments.

Personal Characteristics

Airlines look for job candidates who have the following characteristics:

- poised and well-groomed
- tactful
- energetic
- adaptable and resourceful
- safety conscious
- able to deal comfortably with the public.

Successful flight attendants enjoy having clear guidelines for their work, helping people and handling equipment.

Educational Requirements

(section revised FEBRUARY 2005)

While the specific hiring requirements for flight attendants vary from one airline to another, certain basic requirements are common. In general, to be employed by airlines based in Canada, flight attendants must:

- be Canadian citizens or have landed immigrant status
- be in good physical health, which includes passing a medical and eyesight examination
- have a **high school diploma** or equivalent education
- have previous full-time experience in a job involving public contact and/or have post-secondary education
- be fluent in English (some airlines also require fluency in French)
- be willing to relocate to any of the airline's bases.

A second language is a definite asset.

Canadian Tourism College, a private vocational school in Vancouver, offers a 60-hour Initial Flight Attendant Training program by distance delivery.

Airlines provide four to eight weeks of training specific to their operations. After successfully completing this training, flight attendants are assigned to one of the airline's bases.

Employment and Advancement

(section revised JANUARY 2006)

In some airlines, newly hired flight attendants who have successfully completed their flight attendant training are assigned a monthly schedule. In other airlines, new flight attendants are placed in casual positions or are put on "reserve assignment" duty. This means they are on call 24 hours a day by telephone (although they have 12 or more days free of duty each month).

As flight attendants gain seniority, they are awarded a monthly schedule where all flying is known in advance. Monthly schedules, vacations and choice of home base are determined on the basis of seniority.

Flight attendants may advance to supervisory positions such as purser (in-flight supervisor), passenger or flight service director, or training instructor. Competition for advancement to senior positions is keen.

Flight attendants are part of the larger National Occupational Classification 6432: Pursers and Flight Attendants. In Alberta, most people employed in this classification work in the **Transportation and Warehousing** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Transportation and Warehousing industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 1,550 Albertans are employed in the Pursers and Flight Attendants occupational group which is expected to grow 1.5 to 2.5 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 20 to 40 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since flight attendants form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for flight attendants.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Trainees are paid a small training salary as well as accommodation expenses if they are from out of town.

Wage rates increase as flight attendants gain experience. Attendants on overseas flights are paid more than those on domestic flights and large carriers generally pay more than regional and charter carriers. Some flight attendants work part-time in other occupations to supplement their incomes.

Accommodation and expenses during stops away from home base are usually paid but not all airlines pay their flight attendants for non-flying time. Flight attendants are usually eligible for reduced company rates for personal travel.

Related Occupational Profiles

Airline Ticket Agent
Food and Beverage Server
Travel Consultant

Related High School Subjects

Community Health; Cosmetology Studies; Language Arts; Languages (other than English); Physical Education; and Tourism Studies

Related Post-Secondary Fields of Study

Aviation; and Personal and Food Services

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Flight Service Specialist

Produced OCTOBER 2005

Flight service specialists provide information for pilots that is relevant to the safe completion of their flights.

NOC Number(s): 2272.3
Minimum Education: High school diploma
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **O I M**

Duties

Duties and responsibilities vary depending on where flight service specialists are stationed but, in general, they:

- provide preflight information about current and forecast weather conditions, radio frequencies, terrain, suggested routes, airports and related information to help pilots prepare flight plans
- check the completeness and accuracy of flight plans
- provide information about weather conditions, wind speed and direction, and local air traffic for pilots who are preparing for takeoff or landing
- support air traffic control operations by relaying radio requests for flight clearances, arrival and departure information, and position reports
- alert airport emergency services when appropriate and initiate communication searches when aircraft are overdue
- observe, record and report weather conditions at airports.

At airports that have an air traffic control tower, air traffic controllers control airport vehicle traffic on taxiways and runways, and flight information specialists generally do pre-flight and weather briefing. In airports that do not have a tower, flight service specialists provide airport advisory services.

Working Conditions

Flight service specialists normally work rotating shifts so their days off don't necessarily fall on the weekend. They work day, afternoon and night shifts. The work can be hectic and stressful.

Personal Characteristics

Flight service specialists need the following characteristics:

- maturity, emotional stability and strong decision-making skills
- the ability to deal with detailed information quickly and accurately
- the ability to convert two dimensional data into three dimensional visualizations.

They should enjoy operating radio and related equipment, communicating with pilots, and having clear rules and organized methods for co-ordinating information and taking charge of situations.

Educational Requirements

To be employed by NAV Canada, flight service specialists must:

- be a Canadian citizen or landed immigrant
- be at least 18 years of age
- have successfully completed Grade 12 or equivalent education
- pass a basic aptitude exam and interview
- qualify for security clearance
- pass a civil aviation medical exam
- have good hearing and vision (including colour perception)

- have good oral communication skills (diction, enunciation, voice projection) and a command of the English language for positions outside of Quebec. Knowledge of both English and French is essential for positions in Quebec and Ottawa.

Recommended high school courses include mathematics (algebra and trigonometry) and physics. Experience talking to groups or over microphones, and extra-curricular activities that involve talking to groups or over microphones, or require some knowledge of radio-telephone operation, air regulations and aeronautics are definite assets.

After candidates are accepted into the Flight Service Specialist training program, they are enrolled in the **NAV Canada** Training Institute in Cornwall, Ontario, for eight or nine months. Entrance and training standards are very high; not all candidates successfully complete the training.

Employment and Advancement

(section revised JANUARY 2006)

Flight service specialists are employed by NAV Canada. Application forms and information are available on the **NAV Canada website** or by calling 1-877-389-9934.

After their training, flight service specialists may be assigned to any airport in Canada that has a flight service station or a flight information centre. Advancement generally takes the form of moving to more desirable locations.

Flight service specialists are part of the larger National Occupational Classification 2272: Air Traffic Control and Related Occupations. In Alberta, most people employed in this classification work in the **Transportation and Warehousing** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Transportation and Warehousing industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 800 Albertans are employed in the Air Traffic Control and Related Occupations group which is expected to grow 1.5 to 2.5 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 10 to 20 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since flight service specialists form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for flight service specialists.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Salaries for flight service specialists range from about **$43,200 to $58,500 a year.** Trainees earn about **$25,700 a year (2005 figures)**. For current salary figures, see the NAV Canada website.

Other Sources of Information

Air Traffic Specialists CAW Local 2245 website: www.cawlocal2245.ca

Careers in Transportation website: www.transpocity.ca

NAV Canada website: www.navcanada.ca

Related Occupational Profiles

Air Traffic Controller
Canadian Forces Personnel - Commissioned Officer

Related High School Subjects

Language Arts; Mathematics; and Science (Physics)

Related Post-Secondary Fields of Study

Aviation

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Floorcovering Installer

Apprenticeship and Industry Training

Produced FEBRUARY 2006

Floorcovering installers install, repair and replace resilient floorcovering materials such as underlay, carpet, sheet goods (e.g. vinyl) and resilient tile in commercial, residential and industrial buildings.

NOC Number(s): 7295
Minimum Education: Apprenticeship Trade - Grade 9
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **M O i**

Duties

Duties vary from one position to another but, in general, floorcovering installers:

- inspect and prepare subfloors for covering
- determine where to place any necessary seams or joints
- estimate the quantity of material required
- measure and cut floorcovering materials to fit around permanent obstructions
- lay and tack down or glue a foam or rubber pad over floors to be carpeted
- sew carpet seams together or use special heat tape to join carpet pieces
- stretch carpet and fasten it with a tackless strip around the perimeter of the room or by gluing it to the floor
- install sheet goods and resilient tile by applying adhesive to the subfloor, laying the covering and rolling it with a roller
- match and insert pieces of material in damaged areas
- remove or replace baseboard moulding as required
- cover stairs with vinyl nosing or carpet.

Floorcovering installers may also install wall coverings made of carpet or vinyl.

Working Conditions

Floorcovering installers work indoors. They work a 40-hour, five-day week with some overtime required to meet construction deadlines. Renewing or decorating premises already in use may require working at night. There is some risk of knee injury due to kneeling and back injury from twisting and lifting heavy materials.

Floorcovering installers may be required to lift items weighing over 25 kilograms.

Personal Characteristics

Floorcovering installers need the following characteristics:

- physical strength and stamina
- good colour vision to match colours
- good customer service skills
- the ability to get along with others.

They should enjoy working with their hands and performing tasks with little direction or supervision.

Educational Requirements

To work in Alberta, floorcovering installers must be ONE of the following:

- registered apprentices
- certified journeymen
- working for an employer who is satisfied that they have the skills and knowledge expected of certified journeymen

- self-employed.

To **register** with **Alberta Apprenticeship and Industry Training**, apprentices must:

- have at least an Alberta Grade 9 education (or equivalent) or pass an entrance exam
- find a suitable employer who is willing to hire and train an apprentice. Most employers prefer to hire high school graduates and may select apprentices from among their current employees.

The **term of apprenticeship** is three years (three 12-month periods) that include a minimum of 1,390 hours of on-the-job training and seven weeks of technical training in the first year, a minimum of 1,420 hours of on-the-job training and six weeks of technical training in the second and a minimum of 1,600 hours of on-the-job training in the third. High school students can become apprentices and gain credits toward apprenticeship training and a high school diploma at the same time through the Registered Apprenticeship Program (RAP).

Apprentices are required to provide their own tools.

Applicants who have related training or work experience may be eligible for credit or certification.

Floorcovering installer apprentices may attempt the Interprovincial Exam in the final period of their apprenticeship training and, if successful, are granted a Red Seal (which is recognized in most parts of Canada).

Technical training is arranged by Alberta Apprenticeship and Industry Training and is currently offered at the Northern Alberta Institute of Technology (NAIT) in Edmonton.

Pre-employment programs for prospective apprentices and continuing education programs for journeymen may be offered on an as needed basis by the institution(s) listed above or other schools.

Employment and Advancement

Floorcovering installers are employed by floorcovering retail outlets, contractors and installation companies.

Experienced floorcovering installers may advance to supervisory positions, move into sales or customer relations, contract out their services or set up their own retail businesses. Alberta certified journeyman floorcovering installers who have the supervisory or management skills required by industry may apply for an Achievement in Business Competencies Blue Seal by contacting Alberta Apprenticeship and Industry Training.

In Alberta, over 75 per cent of people employed as floorcovering installers in this group work in the **Construction** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Construction industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 2,550 Albertans are employed in the Floor Covering Installers occupational group which is expected to grow 1.2 to 2.2 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 30 to 60 **new** positions will be created each year **in addition** to job openings created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Apprentice floorcovering installers will earn at least minimum wage. Usually the pay increases as the training progresses. According to the Alberta Provincial Apprenticeship Committee for this trade, journeyman wage rates vary, but generally range from **$14 to $28 an hour plus benefits** (2004 estimate).

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Floor Covering Installers occupational group working part-time or full-time earned from **$15,200 to $86,600 a year.** The average salary was **$65,300 a year.**

Other Sources of Information

Alberta Apprenticeship and Industry Training website: www.tradesecrets.org

Alberta Construction Industry "Trade Up!" website: www.careersconstruction.com

Calgary Construction Association website: www.cca.cc

Construction Sector Council website: www.csc-ca.org

Related Occupational Profiles

Glazier
Insulator
Lather-Interior Systems Mechanic
Painter and Decorator
Roofer
Tilesetter

Related High School Subjects

Construction Technologies; and Physical Education

Related Post-Secondary Fields of Study

Trades, Industrial and Related Training

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Floral Designer

Produced OCTOBER 2003

Floral designers create floral arrangements and purchase, sell and care for flowers and potted plants in retail flower shops.

NOC Number(s): 6421
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **M S d**

Duties

Floral designers may use fresh, dried or artificial flowers to create flower arrangements. They create flower arrangements for home decor and special occasions such as weddings, funerals, graduations and banquets. They may work from:

- pre-defined menus of advertised arrangements
- written orders that indicate customers' specific preferences for style, colour, type of flower and cost
- requests based only on selling price (the designer chooses the colour, design and type of flower).

In addition to designing and arranging, floral designers may also:

- cut and condition flowers and foliage for storage to ensure they remain fresh as long as possible
- create in-store and window displays
- serve customers and provide expert advice on the care and maintenance of flowering and foliage plants as well as fresh cut flowers
- sell giftware items
- order flowers and supplies from wholesalers and growers
- serve customers over the phone and manage orders via the Internet
- create designs for sale at the wholesale level
- create trend designs and looks to enhance the shop's image
- perform general cleaning duties in the store (e.g. dust and clean merchandise, wash flower buckets, sweep floors).

Working Conditions

Working conditions in floral shops are generally pleasant. The job involves considerable standing and requires lifting items weighing up to 25 kilograms.

Working hours are standard retail hours, including some evening and weekend work. Long hours may be required to complete arrangements on time during holiday seasons and for special occasions. Part-time work is common.

Personal Characteristics

Floral designers need the following characteristics:

- manual dexterity
- no pollen allergies
- a good sense of colour
- an artistic sense of design
- excellent communication skills
- tact in dealing with customers.

They should enjoy having clear rules and organized methods for their work, selling merchandise and handling flowers.

Educational Requirements

There is **no standard minimum education** requirement to become a floral designer. However, formal education and knowledge of floral design is a definite advantage when seeking employment. Basic math skills are a necessity.

Floral designers develop the speed, efficiency and good workmanship required to create floral arrangements of high quality by **taking related education programs or learning on the job.**

Flowers Canada offers a National Accreditation program. Candidates may elect to pursue certification as a Canadian Accredited Floral Designer or a Canadian Accredited Floral Manager. Each of these certification programs consist of three stages, with the first stage being common to both. Individuals who obtain certification in each program (Design and Management) are then awarded trade-marked certification Canadian Accredited Master Florist. Examinations and instructional workshops are offered across Canada periodically.

Mount Royal College in Calgary offers a three course Floral Design program through Continuing Education and Extension. Applicants must be at least 18 years of age.

Olds College offers a full-time, one year Commercial Floristry certificate program that includes a four week practicum. The entrance requirement is a high school diploma or equivalent with Biology 20 and Math 20 or 23.

Continuing education programs are often offered on an as needed basis.

For current information on programs and mature student admission policies, please check post-secondary calendars or websites.

Floral designers must continue to update their skills and knowledge by attending workshops and design shows, and reading trade publications.

Floral designers who own retail shops need business management skills for:

- hiring, training and supervising staff
- marketing (advertising, sales, promotions, window and in-store displays)
- ordering stock, bookkeeping and basic accounting.

Employment and Advancement

(section revised JANUARY 2006)

Floral designers may be self-employed, or employed full-time or part-time by independent florist shops or retail chain stores. They often start as labourers or assistants, unpacking, cutting and preparing flowers for storage, delivering orders and doing clean-up work. They usually work closely with an experienced floral designer, learning basic arrangements, then advance to more elaborate designs. In some shops, individuals may be employed exclusively as designers.

Advancement generally depends on the person's ability, creativity and ambition. Experienced floral designers who have business and supervisory skills may advance to shop manager positions or establish their own retail shops.

Floral designers are part of the much larger National Occupational Classification 6421: Retail Salespersons and Sales Clerks. In Alberta, most people employed in this classification work in the **Retail Trade** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Retail Trade industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

About 62,550 Albertans are employed in the Retail Salespersons and Sales Clerks occupational group which is expected to grow 1.3 to 2.3 per cent each year from 2005 to 2010 in Alberta. It is forecasted that over 600 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since floral designers form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for floral designers.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Salaries for trainees often start at or just above **minimum wage**. Hourly wages for experienced designers vary considerably. Department store and supermarket employees working in floral departments are paid according to union rates.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Sales Retail Salespersons and Sales Clerks occupational group working part-time or full-time earned from **$10,400 to $154,800 a year.** The average salary was **$25,900 a year.**

Other Sources of Information

Post-secondary institution calendar and website (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Flowers Canada website: www.flowerscanada.org

Related Occupational Profiles

Interior Decorator
Retail Salesperson
Visual Merchandiser

Related High School Subjects

Agriculture; Design Studies; Fashion Studies; Financial Management; Fine Arts (Visual Arts); Language Arts; Mathematics; and Science (Biology)

Related Post-Secondary Fields of Study

Personal and Food Services

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Food and Beverage Server

Produced MARCH 2003

Food and beverage servers accept and serve customers' food and beverage orders in restaurants and bars.

NOC Number(s): 6453
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **M S o**

Duties

Food and beverage servers' duties vary considerably from one type of establishment to another. In fast food outlets, they often work behind counters, using computerized systems to take orders and tabulate bills. In coffee shops and cocktail lounges, they provide quick and efficient service for customers seated at tables. In formal dining establishments, they carefully observe established rules of service and etiquette, and pace the meal according to customer preference. In general, however, food and beverage servers:

- prepare tables or counters for meals
- stock the service area with supplies (e.g. coffee, glassware)
- greet customers, present menus and/or help customers to select menu items
- inform customers about daily specials
- record orders and place them with the kitchen and bar
- pick up and serve orders
- check that customers are enjoying their meals and correct any problems
- suggest and serve desserts and beverages
- clean and re-set tables
- tabulate and present bills for payment.

Working Conditions

Working conditions for food and beverage servers vary from one type of food and beverage establishment to another. They may be required to lift items weighing up to 10 kilograms.

Shift work and split shifts built around normal meal times are common in the food service industry. At busy times, food and beverage servers are constantly on their feet and under pressure to serve customers quickly. They take their own meal breaks between busy meal serving times.

Personal Characteristics

Food and beverage servers need the following characteristics:

- the ability to serve customers cheerfully, courteously and efficiently
- good organization and multi-tasking skills
- good health
- good grooming
- the ability to work as part of a team
- the ability to work with little supervision
- good verbal communication skills and sensitivity to customer needs
- the ability to work calmly under pressure.

Other requirements depend on the environment in which the server works. For example, serving in a coffee shop or cocktail lounge requires the ability to remember many orders and move very quickly.

Food and beverage servers should enjoy having clear rules and organized methods, working with people, and working with tools and equipment.

Educational Requirements

There are **no standard education or training requirements** for food and beverage servers. However, server intervention training such as the "It's Good Business" course offered by the **Alberta Hotel and Lodging Association**, food safety training and food allergy training are definite assets when looking for employment.

Many food and beverage servers start as food service helpers or kitchen helpers and develop the necessary skills and knowledge by observing more experienced workers and taking short courses (e.g. server intervension, food safety). Some employers use self-instructional programs to teach new employees food preparation and service skills.

Food and beverage servers who serve liquor must be at least 18 years of age and have a working knowledge of Alberta Gaming and Liquor Commission regulations concerning the service of alcohol.

In formal dining rooms, food and beverage servers must:

- know proper food service etiquette
- use the correct terminology and be able to answer questions about wines and other beverages
- be able to prepare tableside dishes (e.g. flambe) at the customer's table, if required.

The **Alberta Tourism Education Council (ATEC)** has developed a process for food and beverage servers and wine servers to receive certification that is recognized throughout the tourism and hospitality industry in Canada.

In Alberta, the following institutions offer related programs:

- **Bow Valley College** in Calary offers a one year Food Service Worker, Level I program. The entrance requirement is a Grade 10 reading level and employment in a food service area or access to a commercial or institutional kitchen or dietary department.
- **Grant MacEwan College** in Edmonton offers a Tourism-Hospitality program that includes 22 weeks of classroom training and 10 weeks of work experience. Entrance requirements include English 10 or 13 and Math 10 and 13 and a professional, conservative appearance.

Continuing education programs are often offered on an as needed basis.

For more information about programs and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

(section revised JANUARY 2006)

Food and beverage servers are employed in restaurants, coffee shops, bars, clubs, hotels and other retail eating and drinking establishments. There are more part-time positions in this occupation than there are in most other occupations, and the majority of food and beverage servers are young.

Food and beverage servers can move to better paying jobs in larger and more formal food establishments. They may also advance to lead hand positions (e.g. captain or head waiter/waitress, maitre d' hotel) or other supervisory positions. Although some larger organizations provide management training programs or less formal training on the job for dependable workers who have leadership ability, related post-secondary education and ATEC certification are definite assets for advancement.

In Alberta, most people employed as food and beverage servers in this group work in the **Accommodation and Food Services** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Accommodation and Food Services industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 22,800 Albertans are employed in the Food and Beverage Servers occupational group which is expected to grow 1.1 to 2.1 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 250 to 480 **new** positions will be created each year **in addition** to job openings created by employment turnover.

There is a relatively high employment turnover rate (particularly in lower-priced restaurants) so job openings occur quite frequently. Competition is keen, however, for positions that offer the opportunity to earn more money in tips.

Salary

(section revised OCTOBER 2005)

Food and beverage servers are often paid just above minimum wage **plus tips**. The seasonal nature of the hospitality industry greatly affects earnings from tips (earnings are generally greater during peak periods such as summer or holiday seasons than they are in January and February). In many restaurants, food and beverage servers contribute a portion of their tips to a tip pool which is distributed among all food and beverage service workers, including food service helpers, hosts/hostesses and bartenders.

Servers who provide superior customer service, particularly in restaurants where meal prices are higher, generally earn most of their income from tips.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Food and Beverage Servers occupational group working part-time or full-time earned from **$9,200 to $39,000 a year.** The average salary was **$11,100 a year.**

Tips may add considerably to food and beverage servers' incomes.

Other Sources of Information

(section revised OCTOBER 2005)

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Hotel and Lodging Association website: www.albertahotels.ab.ca

Alberta Restaurant and Foodservices Association website: www.arfa.net

Alberta Tourism Education Council (ATEC) website: www.atec.ca

Related Occupational Profiles

Bartender
Flight Attendant
Food and Beverage Service Supervisor In Formal Dining Rooms
Food Service Helper
Kitchen Helper and Food Assembler

Related High School Subjects

Community Health; Foods; Language Arts; Mathematics; Physical Education; and Tourism Studies

Related Post-Secondary Fields of Study

Personal and Food Services

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Food and Beverage Service Supervisor In Formal Dining Rooms

Produced MARCH 2003

Food and beverage service supervisors co-ordinate and supervise food and beverage service in formal restaurants and dining rooms.

NOC Number(s): 6212
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **M D s**

Duties

Job titles and responsibilities in this occupation vary from one eating establishment to another. The following descriptions outline the usual responsibilities for supervisors in formal dining establishments.

Captain waiter/waitress is the title sometimes used for the head food and beverage server in a section of a formal dining room. In general, captains have the following duties and responsibilities:

- train and lead teams of food and beverage servers
- keep their sections neat and attractive
- ensure that the food and beverage service workers in their sections are well groomed, properly attired and efficient
- check table settings
- co-ordinate service so food is served at the proper time and temperature
- greet guests and present menus and wine lists.

Captains may also:

- serve wine and liquor
- carve meat and prepare flambe dishes at customers' tables
- present bills and accept payments.

Captains generally remain in the dining room taking care of guests and supervising servers who pass orders to the kitchen and serve food. They may, however, assist food and beverage servers in their sections as required.

Maitres d'hotel is the proper name for the supervisors commonly called maitre d's. Maitres d'hotel are responsible for all aspects of food and beverage service in formal dining establishments. In general, they have the following duties and responsibilities:

- hire, train and supervise food and beverage service staff
- schedule staff hours
- order dining room supplies and equipment
- take reservations
- greet guests and assign tables
- settle customer complaints
- maintain and control smallware and liquor inventories
- prepare cash receipts after the restaurant closes
- participate in management activities such as menu development, budgeting and revenue forecasting.

They may also be responsible for marketing and advertising the restaurant.

Working Conditions

Supervisors of food and beverage service generally work in pleasant surroundings. They often work evenings, weekends and holidays. At busy meal times, they are constantly on their feet to ensure that customers are served promptly.

Personal Characteristics

Supervisors in food and beverage service need the following characteristics:

- a good memory for details and guests
- good verbal communication skills
- the ability to remain pleasant and diplomatic at all times.

They should enjoy co-ordinating information (e.g. schedules, stock), supervising the work of others and working with a variety of people.

Educational Requirements

(section revised OCTOBER 2005)

Food and beverage service supervisors in formal dining rooms need a good working knowledge of food preparation and wines. Although many employers prefer to hire post-secondary program graduates for supervisory positions, the primary requirement is previous experience in the hospitality industry. Training may be on the job.

Those who wish to advance to management positions in the hospitality industry should obtain related training and certification. For example, server intervention training such as the "It's Good Business" course offered by the **Alberta Hotel and Lodging Association**, food safety training and food allergy training are definite assets when looking for employment.

In Alberta, colleges, technical institutes and universities throughout the province offer post-secondary programs in business administration and management. The following institutions offer post-secondary programs that are less than one year in length and directly related to management in the hospitality industry (for information about longer programs, see the Restaurant Manager occupational profile):

- The **Northern Alberta Institute of Technology** in Edmonton offers a:
  - one year certificate and a two year Hospitality Management diploma program. The minimum education requirement for both programs is Grade 11 including English and math.
  - two year Food and Nutrition Management diploma program. The entrance requirement for this program is a high school diploma with English 30 or 33, Math 20 or 23, Biology 20 or 30 and any other 30 level science.
- **Red Deer College** offers a one-year certificate program in Hospitality and Tourism with a specialization in food and beverage management. The entrance requirement is a high school diploma or equivalent.
- **Robertson College** offers a 40-week International Hospitality and Hotel Management program. The entrance requirement is a high school diploma with a Grade 12 English.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

The **Alberta Tourism Education Council (ATEC)** has developed occupational standards for hosts/hostesses and maitres d'hotel, and offers certification which is recognized throughout the tourism and hospitality industry in Canada.

Employment and Advancement

(section revised JANUARY 2006)

Supervisors of food and beverage service in the hospitality industry are employed in restaurants, lounges, private clubs and other formal service establishments.

Experienced supervisors may advance to positions such as banquet manager, catering manager or restaurant manager. Supervisors who have related post-secondary education or ATEC certification have an advantage when applying for further advancement.

Food and beverage service supervisors in formal dining rooms are part of the much larger National Occupational Classification 6212: Food Service Supervisors. In Alberta, over 75 per cent of people employed in this classification work in the **Accommodation and Food Services** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Accommodation and Food Services industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)

- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 5,550 Albertans are employed in the Food Service Supervisors occupational group which is expected to grow 1.9 to 2.9 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 100 to 170 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since supervisors in formal dining rooms form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for supervisors in formal dining rooms.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Since captains serve customers directly, as well as supervise food and beverage servers, they may receive tips. In most restaurants, food and beverage servers contribute a portion of their tips to a tip pool which is distributed among all food and beverage service workers, including food service supervisors.

Earnings in this group of occupations vary tremendously depending on the responsibilities of the position and the nature of the dining establishment.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Food Service Supervisors occupational group working part-time or full-time earned from **$9,600 to $41,500 a year.** The average salary was **$16,300 a year.**

Other Sources of Information

(section revised OCTOBER 2005)

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Hotel and Lodging Association website: www.albertahotels.ab.ca

Alberta Restaurant and Foodservices Association website: www.arfa.net

Alberta Tourism Education Council (ATEC) website: www.atec.ca

Related Occupational Profiles

Banquet Manager
Food and Beverage Server
Food Service Supervisor
Restaurant Manager

Related High School Subjects

Community Health; Foods; Language Arts; Management and Marketing; Mathematics; Science; and Tourism Studies

Related Post-Secondary Fields of Study

Personal and Food Services

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Food and Nutrition Manager

Produced MARCH 2003

Food and nutrition managers provide nutrition care and supervise food service operations in health care settings and commercial food service establishments.

NOC Number(s): 6212
Minimum Education: 2 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: M D s

Duties

Duties and responsibilities vary from one position to another but, in general, food and nutrition managers:

- supervise food preparation and service operations (for more information, see the Food Service Supervisor occupational profile)
- plan and evaluate menus according to nutrition standards and menu planning principles
- co-ordinate and plan food service department operations by setting department goals, policies and procedures
- monitor, maintain and improve quality standards through audits, surveys, checks and inspections
- maintain safety and sanitation standards
- establish, monitor and evaluate customer service plans
- purchase food, equipment and supplies to established specifications and ensure proper receiving and storage
- implement budgets and control costs
- market food services within their organizations or to the public in general
- interview clients and gather information to assist in developing nutritional care plans
- make recommendations for improving food intake based on clients' needs and established guidelines
- adapt client menus for special nutrient needs or restrictions
- hire, train and direct the work of food service personnel
- keep records of customer information.

Food and nutrition managers work as part of a team with representatives of other departments in their organizations. They may work under the direction of dietitians (for more information, see the Dietitian occupational profile).

Working Conditions

Food and nutrition managers may work rotating shifts, including weekends and holidays. They spend long periods of time standing while supervising food production and service in warm, sometimes noisy kitchens. Some lifting up to 10 kilograms may be required.

Personal Characteristics

Food and nutrition managers need the following characteristics:

- an interest in food and its composition, preparation and service
- an interest in helping people make healthy choices
- the ability to put clients at ease and instill confidence
- excellent verbal and written communication skills
- organizational and leadership abilities
- good problem-solving skills
- the ability to work in a team environment
- the ability to adapt in an atmosphere of constant change.

They should enjoy directing the work of others and compiling information.

Educational Requirements

(section revised FEBRUARY 2004)

Food and nutrition managers need **related post-secondary education**.

In Alberta, the following post-secondary institutions offer food and nutrition management programs:

- **Bow Valley College** in Calgary offers a one year Level I and Level II Nutrition Manager program. Applicants must be employed in the food service area.
- The **Northern Alberta Institute of Technology (NAIT)** in Edmonton offers a two year Food and Nutrition Management diploma program that includes a four-month practicum. The minimum entrance requirement is a high school diploma with English 30 or 33, Math 20 or 23, Biology 20 or 30 or any other 30-level science.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

The **Canadian Healthcare Association** offers a two year distance education program in Food Service and Nutrition Management. The entrance requirement is Grade 12 or equivalent education. Applicants must be working in food service at least half-time and perform supervisory duties at least 30 hours a month.

For information about related degree programs, see the Dietitian occupational profile.

Other Requirements

The Canadian Society of Nutrition Management offers certification in nutrition management. Certification is not mandatory.

Employment and Advancement

(section revised JANUARY 2006)

Food and nutrition managers are employed by organizations that sell food or food products, have food service outlets or provide nutritional services to clients. For example, they may work for:

- restaurants
- catering companies
- cafeterias in large organizations
- schools or post-secondary institutions
- correctional institutions
- hospitals or community health centres
- continuing care centres or nursing homes.

Food and nutrition managers are part of the larger National Occupational Classification 6212: Food Services Supervisors. In Alberta, over 75 per cent of people employed in this classification work in the **Accommodation and Food Services** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Accommodation and Food Services industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 5,550 Albertans are employed in the Food Service Supervisors occupational group which is expected to grow 1.9 to 2.9 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 100 to 170 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since food and nutrition managers form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for food and nutrition managers.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Food Service Supervisors occupational group working part-time or full-time earned from **$9,600 to $41,500 a year.** The average salary was **$16,300 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Hotel Association website: www.albertahotels.ab.ca

Alberta Restaurant and Foodservices Association website: www.arfa.net

Alberta Society of Nutrition Management website: www.telusplanet.net/public/asnm

Canadian Healthcare Association website: www.cha.ca

Canadian Society of Nutrition Management website: www.csnm.org

Related Occupational Profiles

Dietitian
Food Service Supervisor

Related High School Subjects

Financial Management; Foods; Language Arts; Management and Marketing; Mathematics; and Science (Biology)

Related Post-Secondary Fields of Study

Human Ecology, Fashion and Food Sciences

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Food Science Technologist

Produced MARCH 2005

Food science technologists work independently or provide technical support in laboratory analysis, food product development, processing, quality assurance or regulatory positions.

NOC Number(s): 2211.1
Minimum Education: 2 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **O I M**

Duties

Food science technologists may work in one of four areas:

- In **applied research and development,** they assist in the development of new processing methods and new or improved foods to meet customer requests for healthier and safer foods. In general, they conduct tests to see that products meet government and industry standards and satisfy consumer needs (e.g. have a long shelf-life).
- In **quality control or assurance,** they check raw ingredients for freshness, maturity or stability for processing, and check finished products for safety, quality and nutritional value. They also may develop scientifically-based quality assurance programs, inspect processing line operations, or develop and improve packaging and storage methods.
- In **processing plants,** they develop production specifications, schedule processing operations, and evaluate processing and storage operations. They may be employed in managerial positions.
- In **regulatory agencies**, they inspect food processing operations. For related information, see the Agricultural Commodity Inspector occupational profile.

To ensure food safety, food science technologists monitor hazard analysis and critical control point (HACCP) programs and take corrective active when necessary.

Working Conditions

Food science technologists work in laboratories and processing plants. In some working environments, they may be required to work shifts.

Personal Characteristics

Food science technologists need the following characteristics:

- good organizational skills
- a high degree of intellectual curiosity
- the ability to work well as part of a team
- creative problem-solving skills
- good interpersonal skills.

They should enjoy using instruments and equipment to perform tasks requiring precision, analyzing data and conducting sampling and analysis programs, and supervising the work of others.

Educational Requirements

Food science technologists need **post-secondary education in a related field such as chemical technology, chemistry, biochemistry or microbiology**.

Three and four year degree programs and up-to-two year transfer programs in biochemistry, chemistry and microbiology are offered by colleges, university colleges, and universities located throughout Alberta. For more information, see the Biochemist, Chemist, Dietitian and Microbiologist occupational profiles.

Two year diploma of technology programs are offered by institutes of technology and colleges. For more information, see the Chemical Technologist and Food and Nutrition Manager occupational profiles.

Employment and Advancement

(section revised JANUARY 2006)

Food science technologists work for food and beverage processing and manufacturing companies, and private consulting firms, involved in:

- meat and poultry slaughter and processing
- dairy processing
- cereal grains and their products including flour, cereal, pasta and snack foods
- bakery and confectionery goods
- vegetable oil refining and product manufacturing
- soft-drink manufacturing
- brewing, wine-making and distilling
- vegetable processing
- sugar manufacturing
- specialty foods manufacturing.

Most new graduates start as technicians, often in junior positions. Experienced food science technologists can move into:

- supervisory or administrative positions in quality assurance, inspection or regulation
- production management trainee positions leading to plant supervisory positions
- marketing and sales
- new product development, and process research and development
- regulatory positions with federal and provincial government agencies
- consulting positions with international food agencies such as the United Nations' World Health Organization (WHO), the Canadian International Development Agency (CIDA), the Food and Agriculture Organization (FAO) or PLENTY Canada.

Food science technologists are part of the much larger National Occupational Classification 2211: Chemical Technologists and Technicians. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Petrochemicals, Rubber, Plastics and Chemicals Manufacturing**
- **Professional and Technical Services**
- **Oil and Gas Extraction**
- **Public Administration**
- **Food and Beverage Products Manufacturing**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation**.

Over 2,150 Albertans are employed in the Chemical Technologists and Technicians occupational group which is expected to grow 1.6 to 2.6 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 30 to 60 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since food science technologists form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for food science technologists.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised SEPTEMBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Chemical Technologists and Technicians occupational group working part-time or full-time earned from **$23,500 to $89,300 a year.** The average salary was **$53,600 a year.**

Other Sources of Information

EDinfo website: www.alis.gov.ab.ca/edinfo

Canadian Institute of Food Science and Technology (CIFST) website: www.cifst.ca

Related Occupational Profiles

Agricultural Commodity Inspector
Baker
Biological Technician
Chemical Technologist
Food Scientist
Herbalist

Related High School Subjects

Agriculture; Foods; Language Arts; Mathematics; and Science (Biology; and Chemistry)

Related Post-Secondary Fields of Study

Human Ecology, Fashion and Food Sciences; and Sciences

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Food Scientist

Produced MARCH 2005

Food scientists investigate the chemical, microbiological, physical and sensory nature of food, and apply their knowledge in the development, processing, preserving, packaging, distributing and storing of foodstuffs.

NOC Number(s): 2121.1
Minimum Education: 4 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **I O D**

Duties

Food scientists may work in research, processing and product development or management. Their job titles often reflect their area of specialization (e.g. food chemist, food microbiologist, food engineer).

In general, food scientists work in five areas:

- **basic research** - studying the structure and composition of food, or the changes foods undergo in storage and processing. For example, research scientists may develop new sources of protein, or search for factors that affect the flavour, texture or appearance of foods.
- **applied research and development** - developing new processing methods and new or improved foods to create healthier and safer food products with a longer shelf life. Research and development scientists often work very closely with marketing personnel.
- **quality assurance** - checking raw ingredients for maturity or stability for processing, and finished products for safety, quality and nutritional value. Food scientists in this field also may develop quality assurance programs, inspect processing operations, develop and improve packaging and storage methods or conduct product analysis.
- **processing** - developing production specifications, scheduling processing operations, evaluating processing and storage operations in processing plants, and working with engineers and plant operators.
- **regulatory** - inspecting food processing operations, investigating food borne illness outbreaks and co-ordinating recalls. For related information, see the Agricultural Commodity Inspector occupational profile.

To ensure food safety, food scientists develop, implement and monitor Hazard Analysis and Critical Control Point (HACCP) programs.

Working Conditions

Food scientists generally work in offices, laboratories and processing plants. Those employed in processing plants may work shifts including evenings, weekends and holidays.

Personal Characteristics

Food scientists need the following characteristics:

- good organizational skills
- a high degree of intellectual curiosity
- strong communication and public speaking skills
- the ability to work as a member of a team
- creative problem-solving abilities
- excellent interpersonal skills.

They should enjoy:

- synthesizing information to develop innovative approaches to problems
- using instruments and equipment to perform tasks requiring precision
- supervising the work of others.

Educational Requirements

The minimum education requirement for food scientists is a **four year bachelor's degree in a related discipline** such as food science, biochemistry, chemistry or microbiology. Advancement opportunities are best for those who have a related master's degree. A doctoral degree (PhD) is generally required for independent research positions, university teaching positions and executive positions in companies.

In Alberta, the **University of Alberta** in Edmonton offers a four year Bachelor of Science (B.Sc.) degree program in Nutrition and Food Science with a specialization in food science and technology. The entrance requirement is a minimum average (65 to 80 per cent) in English 30, Math 30 or Pure Math 30, Biology 30, Chemistry 30 and one other approved Grade 12 subject (Physics 30 recommended for the food science and technology specialization). The University of Alberta also offers master's and doctoral degree programs in food science.

The University of Alberta and other universities and university colleges in Alberta offer related four year degree programs in biochemistry, chemistry and microbiology. For information about these programs, see the Biochemist, Chemist and Microbiologist occupational profiles.

Post-secondary institutions throughout Alberta offer university transfer programs that allow students to apply up to two years of study toward university bachelor's degree programs. It is the student's responsibility to ensure that the courses they choose to take will be accepted for credit at the institution to which they wish to transfer.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

Most companies involved in food and beverage processing or manufacturing employ food scientists. Major sectors in Alberta's food processing industry include:

- meat and poultry slaughter and processing
- dairy processing
- cereal grains and their products (including flour, cereal, pasta and snack foods)
- bakery and confectionery goods
- vegetable oil refining and product manufacturing
- soft drink manufacturing
- brewing, wine making and distilling
- vegetable processing
- sugar manufacturing
- specialty foods manufacturing.

Food scientists may work in research and development, quality assurance, inspection, management, or production or processing areas (in food plants). Retail food chains employ food scientists to develop food safety programs.

Food scientists also may be employed in the Government Services or Education industries, or work overseas as consultants with international food agencies such as the United Nations' World Health Organization (WHO), the Canadian International Development Agency (CIDA), the Food and Agriculture Organization (FAO) or PLENTY Canada.

Most new graduates start work as technicians, often in junior positions. Once they have gained experience, they can move into:

- supervisory or administrative levels of quality assurance, inspection and regulation
- production management trainee positions leading to plant supervisory positions
- marketing and sales
- new product development, and process research and development
- regulatory positions with federal and provincial government agencies.

Food scientists employed by federal and provincial government agencies may advance from laboratory technician positions to scientist or supervisory positions. A master's degree may be required for advancement.

Research and teaching positions at universities and technical institutes generally require a doctoral degree, particularly at universities.

Salary

(section revised SEPTEMBER 2005)

Food scientists' salaries vary considerably depending on the scientist's qualifications and the employer.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Biologists occupational group working part-time or full-time earned from **$29,400 to $103,200 a year.** The average salary was **$64,800 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Canadian Institute of Food Science and Technology (CIFST) website: www.cifst.ca

Related Occupational Profiles

Agricultural Commodity Inspector
Agrologist
Biologist
Biotechnologist
Chemist
Dietitian
Ecologist
Food Science Technologist
Geneticist
Home Economist
Microbiologist
Pharmacologist
Physiologist
Public Health Inspector
Toxicologist

Related High School Subjects

Agriculture; Foods; Language Arts; Mathematics; and Science (Biology; Chemistry; and Physics)

Related Post-Secondary Fields of Study

Human Ecology, Fashion and Food Sciences; and Sciences

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Food Service Helper

Produced MARCH 2003

Food service helpers clear tables and assist workers who serve food and beverages in restaurants and other food service establishments.

NOC Number(s): 6641.3
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: O M s

Duties

Dining room assistants assist food and beverage servers in restaurants and formal dining establishments. In general, they perform the following duties:

- clear and reset tables
- wipe tables or remove and replace soiled table linens
- carry dirty dishes to the dishwashing area
- serve water or bread products to customers
- ensure that each table has supplies of sugar, butter, etc.
- bring out trays of food
- serve coffee
- clean up spilled food and broken dishes.

Dining room assistants must be quick to help food and beverage servers whenever their assistance is needed. During less busy periods between mealtimes, they may:

- stock cabinets
- spot-clean walls
- dust
- vacuum
- perform other tasks such as scraping and stacking dishes in the kitchen.

Food and beverage service runners or assistants deliver food orders from the kitchen to the appropriate tables. Runners may also perform duties similar to those of dining room attendants.

Caterer helpers assist caterers with the service of food and refreshments at social functions and banquets. In general, they perform the following duties:

- arrange tables and decorations according to instructions
- prepare simple foods and beverages
- distribute food to servers
- collect dirty dishes and return them to the kitchen
- scrape dishes and either wash them or pack them for transporting and washing at the caterer's establishment
- collect and pack tablecloths and accessories for transport.

Working Conditions

Food service helpers usually work shifts, sometimes split shifts, and often work weekends and holidays. At busy mealtimes, they are constantly on their feet and under pressure to work quickly. They may be required to lift items weighing up to 25 kilograms.

Personal Characteristics

Food service helpers need the following characteristics:

- good health and personal hygiene
- an interest in learning about food and beverage service
- a cheerful, positive attitude
- the ability to work well in a team environment.

They should enjoy handling dishes, having clear rules and organized methods, and working with people.

Educational Requirements

There are no standard education requirements for food service helpers. They are trained on the job.

Employment and Advancement

(section revised JANUARY 2006)

Food service helpers are employed in restaurants and formal dining rooms. Most food service helpers are students employed in part-time positions.

When dining room attendants have learned food and beverage service skills by observing experienced food and beverage servers, they may advance to food and beverage server positions.

Food service helpers are part of the larger National Occupational Classification 6641: Food Counter Attendants, Kitchen Helpers and Related Occupations. In Alberta, over 75 per cent of people employed in this classification work in the **Accommodation and Food Services** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Accommodation and Food Services industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 30,700 Albertans are employed in the Food Counter Attendants, Kitchen Helpers and Related Occupations group which is expected to grow 1.0 to 2.0 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 300 to 620 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since food service helpers form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for food service helpers.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Wages for food service helpers in non-union working environments generally range from **minimum wage to $8 per hour**. In most restaurants, food and beverage servers contribute a portion of their tips to a **tip pool** which is divided and distributed among other food and beverage service workers, including dining room attendants.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Food Counter Attendants, Kitchen Helpers and Related Occupations group working part-time or full-time earned from **$9,000 to $39,800 a year.** The average salary was **$13,300 a year.**

Other Sources of Information

Alberta Hotel and Lodging Association website: www.albertahotels.ab.ca

Alberta Restaurant and Foodservices Association website: www.arfa.net

Alberta's Training Excellence Corporation website: www.atec.ca

Related Occupational Profiles

Food and Beverage Server
Kitchen Helper and Food Assembler

Related High School Subjects

Physical Education; and Tourism Studies

Related Post-Secondary Fields of Study

Personal and Food Services

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Food Service Supervisor

Produced MARCH 2003

Food service supervisors are responsible for the day to day management of food services in health care facilities, cafeterias, catering and hospitality establishments.

NOC Number(s): 6212
Minimum Education: High school diploma
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **M D s**

Duties

Food service supervisors work under the direction of food service managers. Duties vary from one position to another but, in general, food service supervisors:

- direct and co-ordinate the activities of workers operating kitchen equipment and preparing, portioning and serving food
- forecast menu requirements based on a master menu and prepare production sheets/orders for food preparation workers
- estimate requirements and order food, equipment and supplies
- supervise and direct the assembly of special diet and regular trays, and the delivery of food carts, ensuring that all food safety regulations are followed
- maintain food and equipment inventories
- develop equipment maintenance schedules, arrange for repairs as needed and evaluate new products
- supervise cafeteria services and catered events
- conduct audits regarding patient/client satisfaction, food wastage, sanitation and safety
- set up work schedules and train food service workers.

Depending on the size of the food service department, supervisors may also assist in:

- the development of departmental objectives, budgets, policies, procedures and strategies
- the selection and supervision of food service staff.

In continuing care centres and nursing homes, food service supervisors may visit incoming residents to determine their nutritional needs and preferences.

Working Conditions

Shift work is usually required, including weekends and holidays. Food service supervisors spend long periods of time on their feet in warm and sometimes noisy kitchens. Some lifting up to 10 kilograms may be required.

Personal Characteristics

Food service supervisors need the following characteristics:

- excellent physical health and stamina
- emotional maturity
- excellent communication and organizational skills
- good interpersonal skills for dealing with all types of people, from patients to medical professionals
- good problem-solving skills
- the ability to work effectively in a team environment
- the ability to remain composed when faced with unexpected problems and stressful situations.

They should enjoy co-ordinating information (e.g. schedules, inventory), supervising the work of others and working with people.

Educational Requirements

Food service supervisors must be familiar with all aspects of food service, including:

- food production
- menu planning and costing
- food safety and sanitation regulations
- food service activities and policies
- effective business practices.

Most employers prefer to hire job applicants who have related post-secondary education. For example, employers in the tourism and hospitality industry may prefer to hire graduates of related post-secondary programs (for more information, see the Banquet Manager, Caterer, Food and Beverage Service Supervisor in Formal Dining Rooms and Restaurant Manager occupational profiles).

Larger health care institutions are required to have qualified dietitians or food and nutrition management technologists in charge of their food service departments (for more information, see the Dietitian and Food and Nutrition Manager occupational profiles).

Employment and Advancement

(section revised JANUARY 2006)

Most food service supervisors are employed by:

- hospitals and community health centres
- continuing care facilities
- large organizations that have their own cafeterias
- commercial food establishments (including fast food outlets)
- contract food companies.

Advancement opportunities may be limited for food service supervisors who do not have related post-secondary education.

In Alberta, over 75 per cent of people employed as food service supervisors work in the **Accommodation and Food Services** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Accommodation and Food Services industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 5,550 Albertans are employed in the Food Service Supervisors occupational group which is expected to grow 1.9 to 2.9 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 100 to 170 **new** positions will be created each year **in addition** to job openings created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Salaries for food service supervisors vary depending on the size and location of the employing organization.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Food Service Supervisors occupational group working part-time or full-time earned from **$9,600 to $41,500 a year.** The average salary was **$16,300 a year.** Salaries in hospitals and healthcare institutions are generally near the top of the range.

Other Sources of Information

Alberta Hotel and Lodging Association website: www.albertahotels.ab.ca

Alberta Restaurant and Foodservices Association website: www.arfa.net

Alberta Society of Nutrition Management website: www.agt.net/public/asnm

Canadian Food Service Executives Association website: www.cfsea.ca

Canadian Healthcare Association website: www.cha.ca

Related Occupational Profiles

Banquet Manager
Caterer
Dietitian
Food and Beverage Service Supervisor In Formal Dining Rooms
Food and Nutrition Manager
Restaurant Manager

Related High School Subjects

Financial Management; Foods; Language Arts; Management and Marketing; Mathematics; Physical Education; Science (Biology); and Tourism Studies

Related Post-Secondary Fields of Study

Personal and Food Services

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Foreign Service Officer

Produced MAY 2003

Foreign service officers work in diplomatic offices in countries around the world providing advice to the Canadian government on foreign policy matters, and acting on behalf of Canada abroad.

NOC Number(s): 4168
Minimum Education: 6 years post-secondary education/training
Employment Outlook: Employment turnover plus below average occupational growth in Alberta
Interests: **D I S**

Duties

In general, foreign service officers are responsible for:

- scientific, technical and information exchanges
- economic and political reporting
- negotiation with host countries
- public affairs activities
- promotion of trade and financial interests
- administration of Canadian missions abroad
- management of immigration programs
- assistance to Canadians travelling, studying and working abroad.

Foreign service officers are recruited and trained by the Canadian government for service in one of four streams. The responsibilities of those in each stream vary depending upon whether they are working abroad in diplomatic offices or in Canada.

The duties of foreign service officers in the **political/economic affairs stream** when abroad include:

- economic and political analysis of events in the host country
- advancement of Canadian foreign policy
- management of information regarding the host country and Canadian policy
- consular and administrative tasks.

When stationed in Canada, they may be responsible for:

- media relations regarding Canadian foreign policy
- supporting operations abroad
- dealing with foreign diplomats in Canada.

The duties of foreign service officers employed in the **international service (immigration and citizenship) stream** when abroad include:

- interviewing and counselling immigrant applicants to ensure that persons seeking admission to Canada meet the requirements set out by immigration legislation
- preparing reports and case summaries of applicants
- assisting with the emergency needs of Canadian citizens abroad
- analyzing and reporting on health, unemployment insurance and other social programs of the host country.

In Canada, foreign service officers in this stream may be responsible for:

- developing and analyzing immigration programs and policy
- monitoring human resource utilization
- reviewing and contributing to the improvement of humanitarian and refugee programs.

When abroad, foreign service officers in the **trade commissioner service stream** are responsible for helping Canada to gain a greater share of the world market. The duties of trade commissioners include:

- identifying and developing markets for Canadian products and services
- establishing and maintaining contact between Canadian exporters and government representatives of state

trading agencies abroad
- facilitating business contacts on behalf of Canadian client companies, federal and provincial government branches
- identifying and reporting on economic and trade-policy developments of the host country.

When stationed in Ottawa or assigned to a regional International Trade Centre elsewhere in Canada, trade commissioners may be responsible for policy formation and specialized areas of trade development.

When abroad, officers in the **management consular stream** are responsible for managing administrative programs at Canadian Missions. Their duties may include:
- administering program budgets
- negotiating leases and facilities for offices and staff quarters
- managing human resource programs for local staff
- conducting cost of living surveys
- providing services to distressed Canadians.

All foreign service officers must keep informed about the latest developments in Canadian policy, including current immigration regulations, guidelines and policies.

Working Conditions

Assignments for foreign service officers are usually two to four years abroad. Those in the political/economic stream usually are assigned to headquarters for a similar length of time. Those in the international service stream spend more time working abroad than in Canada. Trade commissioners spend two-thirds of their careers abroad.

Foreign service officers must be prepared to work anywhere in the world. In some countries, there are restrictions on personal movement for political or safety reasons. The housing provided is normally in good condition but, in some countries, water must be filtered and food disinfected. Food products may be unfamiliar in local markets and there may be endless line-ups. It is usually not possible for spouses to work abroad.

Personal Characteristics

In general, foreign service officers need the following characteristics:
- an adventurous spirit
- the flexibility required to change their lifestyle
- patience
- good judgment
- a sense of humour
- initiative
- excellent communication skills, both oral and written.

In addition, those employed in the **political/economic stream** should have:
- a tolerance for uncertainty
- keen analytical abilities
- good decision making skills
- strong negotiation skills.

Those employed in the **international service (immigration and citizenship) stream** should have the ability to:
- deal with people at all levels of society
- handle stress
- make decisions
- assess human potential
- make sound and consistent judgements.

Trade commissioners are required to be:
- results-oriented
- sensitive to local customs and business practices
- able to anticipate changes
- enthusiastic
- self-motivated.

Foreign service officers should enjoy co-ordinating information and taking charge of situations, finding innovative solutions to problems, and consulting with and advising people.

Educational Requirements

Applications for foreign service officer positions are accepted once a year (usually in September) by the Public Service Commission of Canada. To be eligible to apply, applicants must be:

- Canadian Citizens
- able to reach the required level of bilingualism within one year
- willing to accept assignments anywhere in the world
- able to qualify for a top secret security clearance
- medically suitable to go abroad.

The academic qualifications required are subject to change. For recent competitions, eligibility was open to candidates who had a master's or doctoral degree in any field, except for the management and consular affairs stream for which the requirement was a graduate degree in administration, management, accounting, industrial/labour relations, psychology or sociology.

Other Requirements

Applicants are required to take a written examination. The examination is administered in universities and government offices across Canada in October of each year. The examination measures an individual's:

- verbal, numerical and reasoning ability
- written communication skills
- knowledge of the foreign service.

The names of those who have achieved satisfactory scores are forwarded by the Public Service Commission to the Department of Foreign Affairs and International Trade for screening. The screening process for candidates consists of submission of a personal history and fingerprint form, and a two part interview (part one is a personal assessment interview; part two is a three-hour group simulation exercise).

After the screening process is complete, applicants selected as potential candidates must provide additional information for security clearance and reference checks. Offers of employment are made once the selection process is complete *and* a match is made with available positions.

Newly selected foreign service officers are placed on probation for one or more years depending on their stream. Training is provided in the stream for which they were selected.

Political/economic stream officers train for up to four years in Ottawa. Their training includes:

- courses in department procedures
- training in Canadian policies and programs abroad
- necessary foreign language training
- courses related to the specific duties of their assignment.

International service (immigration and citizenship) stream officers train for eight months to two years in Ottawa. They receive training in:

- immigration legislation, regulations and procedures
- policy issues and special programs such as refugee and humanitarian programs
- passport services
- interviewing techniques
- consular responsibilities involving assistance to Canadians.

Trade commissioners train in Ottawa for a period of two years. The first year is generally divided into assignments of a trade promotion nature. The second year is spent training for their assignments and receiving the necessary foreign language training.

Management/consular stream officers spend up to two years in Ottawa being trained in departmental administration systems and procedures, consular policies and program requirements.

All officers receive foreign language training prior to their posting abroad.

Employment and Advancement

Political/economic stream officers and trade commissioners are employed by the Department of Foreign Affairs and International Trade. International service stream officers are employed by Citizenship and Immigration Canada.

Five to six thousand applications are received each year. From those applicants, only several hundred make it to the screening stage and approximately a quarter of those interviewed are selected as potential candidates. The number of positions available varies from year to year.

After a probation period, officers whose performance satisfies the needs of the programme are promoted to the next level. For the management /consular stream, advancement is dependent on work performance, a minimum number of years at each level, and the availability of positions at the next level.

Foreign service officers may request cross-stream assignments to broaden their knowledge.

Salary

Individuals requiring official language training before their appointment in the political/economic, trade commissioners' service and international service streams are paid an annual allowance of **$35,220** during their training. Once they reach the required level of proficiency in the other official language, the starting salary is **$44,026** with regular increases bringing the salary to **$55,495** in their fifth year. The starting salary for the management/consular stream is **$43,863 (2002 figures)**.

In addition to their salaries and their health, dental and pension benefits, foreign service officers may receive a premium for serving abroad, a cost-of-living allowance or a hardship allowance. Foreign service officers may also receive:

- supplemental vacation leave with payment of some travel costs
- an allotment for moving personal effects
- equivalent-to-Canada medical care
- paid educational costs for children overseas.

Foreign service officers and their families are housed in government-leased and furnished accommodations, but must pay rent.

Other Sources of Information

Foreign Affairs and International Trade recruitment website: www.dfait-maeci.gc.ca/english/service/menu-e.asp

Related Occupational Profiles

Customs Inspector
Immigration Officer
Interpreter
Mediator
Political Scientist

Related High School Subjects

Language Arts; Languages (other than English); Legal Studies; Mathematics; Physical Education; Science; and Social Studies

Related Post-Secondary Fields of Study

Business, Management and Administrative Studies; Communications; Humanities and Languages; Sciences; and Social Sciences, Law and Religious Studies

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Forensic Laboratory Analyst

Produced OCTOBER 2005

Forensic laboratory analysts use scientific principles and technology to analyze, identify, compare, classify and interpret physical evidence submitted by police and related agencies.

NOC Number(s): 2211.1
Minimum Education: 2 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **O I M**

Duties

Forensic laboratory analysts examine physical evidence to:

- determine its significance for the investigation and prosecution of criminal offenses or suspected offenses
- determine if it can identify or exclude a suspect, or impact the direction of an investigation
- test a hypothesis proposed by an investigator, Crown attorney or defence counsel
- assist in coroners' investigations and other matters of public safety.

Their duties vary depending on their areas of expertise:

- Analysts in the **biology** section identify biological fluids using DNA typing or serological techniques, and may examine hair and fibre evidence.
- Analysts in the **chemistry** section recover non-biological trace evidence in clothing or samples from crime scenes to identify them or compare them to other materials.
- Analysts in the **electronics** section examine various devices particularly those with digital information such as computers, personal organizers and cell phones. They also examine electrical and electronic devices to determine the reason for malfunction (for example, in cases of electrocution).
- Analysts in the **firearms** section determine whether an ammunition component has been loaded into or fired from a particular firearm, assess the mechanical condition and legal status of firearms, analyze gunshot residue and bullet paths, restore serial numbers, and determine whether a tool mark impression was made by a given tool.
- Analysts in the **photoanalysis** section perform a variety of physical comparisons that can be demonstrated by photographic means.
- Analysts in the **questioned documents** section examine bank notes and negotiable instruments such as traveller's cheques to establish their authenticity, and analyze handwritten and machine-produced textual evidence to decipher altered or obliterated text or determine authorship, age or source.
- Analysts in the **toxicology** section analyze body fluids such as blood and urine samples for alcohol and other volatiles, identify and quantify drugs and poisons in biological fluids and tissues, analyze suspicious powders and food that may have been tampered with, and interpret the pharmacological effects of a drug or a combination of drugs on an individual.

Forensic laboratory analysts are employed as scientists or technologists. In general, **scientists** in all sections:

- plan and supervise experiments, tests and analyses
- interpret experimental or analytical results
- prepare written reports and update databases
- develop new technologies and validate new techniques
- train staff members and external clients
- testify in criminal court cases about the significance of physical evidence.

In general, **technologists** in all sections:

- perform experiments, tests and analyses
- operate and maintain laboratory equipment and apparatus
- prepare solutions, reagents and sample formulations
- produce and compile results, and update databases

- develop new technologies and validate new techniques
- train staff members and others
- testify in criminal court cases about exhibit handling, continuity and analytical procedures.

Forensic laboratory analysts are civilian employees who work primarily in laboratories. Police officers conduct investigations. Forensic laboratory analysts receive and analyze materials from crime scenes, and present and discuss results with police investigators, lawyers and medical practitioners.

Working Conditions

Forensic laboratory analysts often work in teams or perform specific parts of an analysis before passing a case to another analyst. Overtime or shift work may be required when there are high volumes of work. Specialists frequently travel to testify in criminal proceedings and other hearings.

Forensic laboratory analysts employed by the Royal Canadian Mounted Police are subject to transfer to other laboratory locations and must be prepared to travel frequently.

Personal Characteristics

Forensic laboratory analysts need the following characteristics:

- good character and no criminal record
- excellent communication skills including the ability to provide courtroom testimony in lay terms and undergo cross-examination
- organizational skills
- analytical ability and problem solving skills
- the ability to work independently and as part of a team.

They should enjoy using tools, instruments and equipment to perform tasks requiring precision, analyzing information and solving problems, and supervising the work of others.

Educational Requirements

The minimum academic requirement for **scientists** in most of the discipline areas is a related four year degree. Specific degree and course requirements vary depending on the employer and type of work. For example, some positions require a degree in a chemical or physical science, or mechanical engineering. Other positions require much more specific qualifications (for example, an honours Bachelor of Science degree in a field such as forensic science, biology, biochemistry, chemistry, microbiology or pharmacology).

Four year bachelor's degree programs in the physical and biological sciences are offered by universities and colleges throughout Alberta. Admission requirements vary but generally include a high school diploma or equivalent with English Language Arts 30-1 or English 30, Pure Math 30 or Math 30, Chemistry 30 or Biology 30 or Physics 30. Math 31 is recommended.

The minimum academic requirement for **technologists** is a related technical institute diploma or related work experience. Some positions require a three year diploma or specific courses.

In Alberta, two year diploma programs in biological and chemical science technologies are offered by the **Northern Alberta Institute of Technology** in Edmonton and the **Southern Alberta Institute of Technology** in Calgary. Admission requirements vary from one program to another but generally include a high school diploma or equivalent education with a competitive average in English Language Arts 30-1 or 30-2 (or English 30 or 33), Pure or Applied Math 30 (or Math 30, 31 or 33), Chemistry 30 or Biology 30.

Mount Royal College in Calgary offers a Certificate in Forensic Studies program by distance education. This program is designed for people who are already employed in health care or law enforcement.

Outside of Alberta, the following post-secondary institutions offer programs directly related to forensic science:

- **British Columbia Institute of Technology** in Burnaby offers an Advanced Specialty Certificate in Forensic Studies program and a Bachelor of Technology in Forensic Investigation degree program. The entrance requirements for the degree program are successful completion of a related two year diploma program, or equivalent, and six months of related work experience. Remedial bridging courses may be required. Applicants must also have a criminal background check and personal interview with the Program Head. Students must have a total of two years of related work experience prior to graduation.

- **Erindale College, University of Toronto**. Applicants must have completed at least four full course equivalents in university including general chemistry and calculus; a major in anthropology, biology, chemistry or psychology; and an average of at least B- in completed course work.
- **Laurentian University** in Sudbury, Ontario offers four Honours B.Sc. degrees in Forensic Science: one with an orientation toward biology and biochemistry, a combined program in forensic anthropology, a combined program in analytical chemistry and instrumentation, and a combined program in forensic psychology. Applicants who have an 85 per cent average in specified courses may be admitted directly from high school. The top 40 applicants are admitted to the program each year.
- **St. Mary's University** in Halifax, Nova Scotia offers a Diploma in Forensic Science program for degree program students who have declared a major and completed five credits with a quality point average of at least 3.00. Police officers or mature students who have previous related work experience may be accepted directly to the program.
- **University of Windsor** in Windsor, Ontario offers honours Bachelor of Forensic Science and Bachelor of Arts in Forensics and Criminology degree programs. The entrance requirement is an average of 70 per cent in six 30-level courses including English, biology, chemistry and calculus (or equivalent) for the BFS program and English, biology and calculus (or equivalent) for the BFAC program. Prior to third year, students must have a B average and reapply to be admitted to the final two years of these programs.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

After they are hired, specialists and technologists must complete in-house training programs before doing any casework. Training programs for specialists range in length from nine months to two years or more. Training programs for technologists last up to six months.

Employment and Advancement

Forensic laboratory analysts are employed by:

- the RCMP (in Edmonton, Halifax, Ottawa, Regina, Vancouver and Winnipeg)
- Canada Revenue Agency (Ottawa)
- the provincial governments of Ontario (Toronto and Sault St. Marie) and Quebec (Montreal)
- a small number of private forensic laboratories.

In Alberta, the Medical Examiner's Office is responsible for performing autopsies and does toxicological work in cases where no foul play is suspected. The RCMP does all other forensic laboratory work.

Advancement usually takes the form of pay increases and increased responsibility for one or more types of analysis. Experienced forensic laboratory analysts may be promoted to supervisory positions.

The employment outlook for this occupation is stable but there are only a few hundred positions in all of Canada. Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Salaries for laboratory analysts range from **$40,000 to $79,000 a year (2005 estimate).**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

American Academy of Forensic Sciences website: www.aafs.org

American College of Forensic Examiners website: www.acfe.com

Canadian Society of Forensic Science website: www.csfs.ca

Forensic Science Society website: www.forensic-science-society.org.uk

Royal Canadian Mounted Police website, Forensic Laboratory Services section: http://www.rcmp.ca/fls/home_e.htm

Related Occupational Profiles

Biochemist
Biological Technician
Biologist
Chemical Technologist
Chemist
Mechanical Engineer
Microbiologist
Pathologist
Pharmacologist
Physicist
Private Investigator
Toxicologist

Related High School Subjects

Communication Technology; Information Processing; Language Arts; Legal Studies; Mathematics; Science (Biology; Chemistry; and Physics); and Social Studies

Related Post-Secondary Fields of Study

Computer and Information Technology; Engineering and Science Technologies; Engineering, Architecture and Related Studies; Health Care and Medical Sciences; and Sciences

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For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Forest Technician

Produced JANUARY 2006

Forest technicians perform technical functions related to forest management, silviculture, harvesting, and conservation and protection.

NOC Number(s): 2223
Minimum Education: 1 year post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **D M I**

Duties

Forest technicians, as they are defined in this profile, work under the supervision of foresters or forest technologists. Duties and responsibilities vary from one position to another but, in general, forest technicians perform the following functions:

- survey forest areas and access roads
- conduct forest inventories by counting and measuring trees in plots along a grid to determine the volume of timber in an area
- make detailed drawings of and flag harvest blocks, haul roads and skid trails
- mark trees for harvesting operations
- inspect logs for defects, measure them to determine total volume and estimate the marketable content for use as sawlogs or pulpwood
- keep records of the amount and condition of logs reaching mills
- survey re-growth on cut areas
- inspect trees and collect samples of plants, seeds, foliage, bark and roots to record insect and disease damage
- use aerial photographs, global positioning systems (GPS) and geographic information systems (GIS) to map forest areas.

Forest technicians may use (or supervise workers who use) chain saws, clearing saws and manual tools, or chemicals to control weeds and undergrowth. They also may be involved in detecting and fighting forest fires:

- operating lookout towers
- combating forest fires on initial attack crews or fire suppression crews
- operating radios
- working at air tanker bases.

Working Conditions

Forest technicians work outdoors in all weather conditions, often performing tasks that are strenuous, sometimes on steep, wet or uneven terrain. Lifting requirements vary depending on the nature of the job but, in general, forest technicians routinely lift loads weighing up to 10 kilograms.

Forest technicians may commute daily to work in the woods or may have to be away from home for a week or more at a time. They may stay in small rural communities or in modern camps. When fighting forest fires, they often work twelve to sixteen hour shifts for several days at a time and may be required to lift equipment weighing up to 25 kilograms. Some positions are seasonal.

Personal Characteristics

Forest technicians need the following characteristics:

- physically fit
- able to pay close attention to details when taking measurements and updating computer databases
- good spatial and form perception for mapping and inspecting

- good motor co-ordination and manual dexterity for adjusting instruments and activities such as tree planting
- good communication and interpersonal skills for dealing with people and working as part of a team.

They should enjoy taking responsibility for projects, having clear rules and organized methods for their work, and solving problems by experimenting.

Educational Requirements

Forest technicians may acquire the required skills and knowledge of provincial forest legislation and regulations by training on the job or taking related education programs. (Note: Some employers use the title forest technician for technical positions requiring a two year post-secondary diploma or a university degree. For information about diploma and degree programs, see the Forest Technologist and Forester occupational profiles.) Computer skills are a definite asset, particularly familiarity with GIS and GPS systems.

In Alberta, the following post-secondary institutions offer one year certificate programs in forestry:

- **Northern Lakes College** in Slave Lake offers a 34 week Forestry Technician certificate program that also may be completed part-time or through self-study. Applicants must be physically fit and healthy, and have at least 30 high school credits including Grade 10 English and math (or write a test and score at the Grade 11 level in English and math).
- **Portage College** in Lac La Biche offers a 36 week Forest Technician certificate program. Applicants must be physically fit and healthy, have at least 60 per cent in English Language Arts 20-1 or 20-2 (or English 20 or 23) and Applied or Pure Math 20 (or Math 23), and complete a career investigation questionnaire.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

Forest technicians are employed by:

- logging companies
- pulp and paper companies
- lumber companies
- forestry consulting firms
- private contracting firms
- provincial governments.

They may have training and work in a particular field:

- In **silviculture,** they work as members of site preparation, tree planting or stand tending crews or as nursery workers, or supervise crews.
- In **timber management**, they work on timber management crews as compass persons, regeneration surveyors, timber cruisers or mapping technicians.
- In **forest protection**, they work in insect and disease control, or as aerial observers, fire-fighters, helitack or rappel crew members, fire look-out personnel (tower personnel), timekeepers, radio operators, forestry warehouse persons or air tank base assistants.
- In **forest harvesting**, they operate equipment, do pre-harvest or post-harvest assessments, scale (grade) timber, or layout cutting blocks or roads.

In private companies or consulting firms, forestry technicians may be employed as log scalers, logging supervisors, woodland assistants/technicians, millworkers, stand tending crew members, fire suppression crew members or road engineering assistants.

Experienced forest technicians may advance to supervisory positions or move into related positions in provincial parks, survey crews, vegetation control, reclamation work, the oil and gas industry, woodlot management or forestry equipment operation. (For more information, see the Logging/Forestry Equipment Operator occupational profile.) Additional education is required to move into forest technologist or forester positions.

Forest technicians are part of the larger National Occupational Classification 2223: Forestry Technologists and Technicians. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Forestry and Logging**
- **Professional and Technical Services**
- **Public Administration**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- time of year (for seasonal jobs)
- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 650 Albertans are employed in the Forestry Technologists and Technicians occupational group which is expected to grow 1.3 to 2.3 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover. (**Note**: Since forest techncians form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for forest technicians.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Starting salaries for forestry technicians vary depending on the type of work performed.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Forestry Technologists and Technicians occupational group working part-time or full-time earned from **$24,300 to $68,300 a year.** The average salary was **$44,800 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Related Occupational Profiles

Arborist
Biological Technician
Forest Technologist
Forester
Logging/Forestry Equipment Operators
Wildland Firefighter

Related High School Subjects

Forestry; Language Arts; Mathematics; Physical Education; Science; and Wildlife

Related Post-Secondary Fields of Study

Environment, Forestry and Related Studies

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Forest Technologist

Produced JANUARY 2006

Forest technologists perform many of the technical functions involved in the scientific management of forested areas.

NOC Number(s): 2223
Minimum Education: 2 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: D M I

Duties

Forest technologists may work independently or under the supervision of foresters. Duties and responsibilities vary from one position to another but, in general, forest technologists:

- supervise timber harvesting (logging) and reforestation operations
- ensure oil and gas industry acitivies comply with forestry legislation
- develop or assist in the development of harvest plans
- take tree measurements and calculate timber volumes
- conduct pre-harvest and post-harvest surveys
- prepare, tender and supervise contracts relating to timber harvesting, scarification and planting
- educate the public through activities such as school talks, science fairs and trade shows
- direct wildfire control operations and monitor fire activities
- supervise seasonal staff and crews
- develop and deliver training programs
- supervise the implementation of watershed management and erosion control plans
- use aerial photographs, global positioning systems (GPS) and geopgraphic information systems (GIS) to map forest areas
- collect tree and vegetation field data
- interpret and apply environmental and forest legislation.

Working Conditions

Forest technologists may work outdoors in all weather conditions (rain, snow, cold etc.) performing tasks that are often strenuous, sometimes on steep, wet or uneven terrain, or indoors conducting experiments, analyzing data and writing reports.

Technologists who work primarily outdoors often work in remote locations, sometimes on their own. They may commute daily to forest sites or routinely be away from home for periods of a week or more, staying in modern camps or small rural communities.

Forest technologists may work 12 to 16 hour shifts when necessary to fight forest fires. Some technologists routinely work 12 hour shifts, four days a week.

Personal Characteristics

Forest technologists need the following characteristics:

- good clerical perception for taking measurements and updating computer databases
- good spatial and form perception for mapping and inspecting
- good motor co-ordination and manual dexterity for adjusting instruments and activities such as tree planting
- good communication and interpersonal skills for dealing with people and working as part of a team.

Those who work primarily outdoors also need to be:

- physically fit

- able to work alone effectively
- able to deal with mechanical problems such as skidoo breakdowns.

All forest technologists should enjoy directing and supervising others, taking a methodical approach to compiling information and enforcing regulations, and developing innovative approaches to problems.

Educational Requirements

Forest technologists are defined for the purposes of this profile as graduates of **two year or three year forest technology programs**. It should be noted, however, that the terms forest technologist and forest technician may be used differently by specific employers and post-secondary institutions.

Computer skills, particularly familiarity with GPS and GIS, are a definite asset.

In Alberta, the **Northern Alberta Institute of Technology (NAIT)** in Edmonton offers a two year Forest Technology diploma program. The first year of this program includes five weeks in the fall at the Kidney Lake Field Training Camp in Swan Hills. The entrance requirement is a general high school diploma or equivalent with English 30 or 33, Pure Math 30 or Applied Math 30 or 33, and two of the following: Biology 20, Chemistry 20, Physics 20. This is a quota program with competitive admission; preference is given to applicants who have 30-level science courses. A St. John Ambulance First Aid Certificate and CPR Heartsaver Certificate are also required. An Alberta Class 4 Driver's License is highly recommended.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

For information about other forestry programs, see the Forester and Forest Technician occupational profiles.

Other Requirements

Under Alberta's Regulated Forestry Profession Act and Registered Professional Forest Technologists Regulation, you must be registered with the College of Alberta Professional Forest Technologists (CAPFT) if you are practicing forestry on Alberta Public Land and are eligible to be a member. Only regulated members of the College have the right to use the title Registered Professional Forest Technologist.

Employment and Advancement

Work experience in the forestry field is a definite advantage for forest technology graduates seeking entry-level positions such as log scaler, timber cruiser or supervisor of a tree-planting crew. Related work experience may be obtained through summer employment with industry or government employers, or participation in the Forestry Youth program. Operated by Land and Forest Services, Alberta Sustainable Resource Development, the Forestry Youth program gives senior high school students work-related forestry experience.

Competition for permanent positions is keen. Post-secondary program graduates usually start their careers in seasonal positions and obtain permanent positions after gaining two to four years of experience. Most positions are in northern Alberta.

Experienced forest technologists may develop forestry plans or assist foresters in developing plans, supervise other forestry workers and technologists who acquire the data for plans, or actually do the field work required to implement plans. Or, they may move into related areas such as provincial parks, survey crews, reclamation crews or the oil and gas industry.

Forest technologists who have significant experience and appropriate qualifications may provide consulting services for the following types of employers:

- firms associated with the production and marketing of forest products (lumber, pulp and paper, plywood, panelboard)
- federal or provincial government departments or agencies
- schools, technical institutes and universities
- oil and mining companies
- power companies.

Forest technologists are part of the larger National Occupational Classification 2223: Forestry Technologists and Technicians. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Forestry and Logging**
- **Professional and Technical Services**
- **Public Administration**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- time of year (for seasonal jobs)
- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 650 Albertans are employed in the Forestry Technologists and Technicians occupational group which is expected to grow 1.3 to 2.3 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover. (**Note**: Since forest technologists form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for forest technologists.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Forestry Technologists and Technicians occupational group working part-time or full-time earned from **$24,300 to $68,300 a year.** The average salary was **$44,800 a year.**

Other Sources of Information

Post-secondary institution calendar and website (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

College of Alberta Professional Forest Technologists website: www.forestechs.ab.ca

Related Occupational Profiles

Forest Technician
Forester

Related High School Subjects

Community Health; Forestry; Information Processing; Language Arts; Mathematics; Mechanics; Physical Education; Science (Biology; and Chemistry); and Wildlife

Related Post-Secondary Fields of Study

Environment, Forestry and Related Studies

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Forester

Produced JANUARY 2006

Foresters plan, administer and direct programs related to managing forested lands and related renewable resources.

NOC Number(s): 2122
Minimum Education: 4 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: I S D

Duties

Foresters work in close consultation with other land and resource management specialists to ensure that forest land is used wisely. Their objective is to optimize production of forest resources and minimize adverse impacts on the land, water and wildlife.

Foresters may:

- prepare and manage plans for reforestation or forest renewal, and oversee seed and tree planting programs for areas where trees have been harvested or burned by forest fires
- assess and deal with the impacts of wild fires, insects, diseases or pollution on forests and develop strategies to minimize forest losses
- prepare and manage long term engineering plans and oversee forest engineering activities such as road layout and construction, bridge construction and culvert installation
- plan and supervise long term timber harvesting operations to achieve minimal timber damage and waste, and minimize the impact of harvesting on aesthetics, wildlife, soil and water resources
- plan forest land use activities such as recreational activities, domestic grazing, timber harvesting, mining, and oil and gas drilling operations
- advise government and industry officials on forest management issues and assess new forest management applications
- manage public involvement processes to identify best practices for forest land use
- oversee the business aspects of forest use
- develop and deliver public education and awareness programs
- develop and use computer programs to aid in forest management.

Foresters also may work in land inspection and enforcement to ensure that forest-cleared lands are reclaimed to their most suitable end use, or that outdoor recreational activities and commercial land uses comply with the guidelines and regulations set for forested public lands.

Foresters working in watershed protection and wildlife management monitor wildlife populations and assess the impacts of forest operations on population and habitats, and study water yield variations following surface disturbances.

Forest scientists may work in forest management science and research areas such as:

- investigating the impact of forest operations on soils, water, wildlife and their habitats
- assessing human and environmental impacts (for example, air pollution, tree diseases, insects, fires and climate changes) on forest habitats
- investigating forest regeneration techniques
- developing and testing new forest products and harvesting processes
- conducting research on tree improvement (for example, developing superior trees through genetic selection)
- assessing how changes in forests impact humans on a social and economic level
- investigating new or alternative ways of enhancing forest renewal opportunities and/or minimizing the negative impact of harvesting.

Working Conditions

In entry level positions, foresters may spend a considerable amount of time working outdoors in the field, by themselves or with small crews. They may work in remote sites or bush camps or spend hours hiking in rugged country, wet muskeg areas or over steep terrain in all kinds of weather conditions. Forest fire control activities are physically demanding and hazardous.

Foresters may choose to continue working in field oriented positions but most foresters work primarily indoors, planning and administering programs or conducting research. Much of their time is spent on activities such as:

- accumulating and analyzing data
- working with a large team of professionals (for example, biologists, hydrologists) to complete land use plans
- corresponding and meeting with industry, government and environmental group representatives
- facilitating meetings with all land users
- developing provincial and federal forest policty
- writing reports or scientific papers
- delivering presentations.

Personal Characteristics

Foresters need the following characteristics:

- the ability to complete the required academic training
- the ability to work effectively alone and in a team environment
- good organizational and communication skills
- a keen interest in all aspects of nature and a serious concern for the environment
- the ability to direct the work of assistants and oversee several different projects at the same time.

Foresters should enjoy exploring things in depth, developing innovative studies and programs, dealing with people and directing the work of others.

Educational Requirements

Foresters must have a university degree in forestry. Forestry research positions usually require at least a master's degree in forestry; often, a doctoral (PhD) degree is required for independent research positions.

In Alberta, the **University of Alberta** in Edmonton offers four year Bachelor of Science degree programs in Forestry and Forest Business Management. The entrance requirement for the Forestry program is an average of at least 70 per cent in English Language Arts 30-1 or English 30, Pure Math 30 or Math 30, Chemistry 30, Biology 30 and one other approved Grade 12 subject. The entrance requirement for the Forest Business Management program is a minimum grade point average in the first year of the Forestry program or 30 approved post-secondary credits. The program includes a one week field school and a three week field school. The University of Alberta also offers master's and PhD programs in forestry.

Post-secondary institutions throughout the province offer university transfer programs that allow students to apply up to two years of study toward university bachelor's degree programs. It is the student's responsibility to ensure that the courses they choose to take will be accepted for credit at the institution to which they wish to transfer.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Outdoor experience (camping, bush travel, use of all-terrain or four-wheel-drive vehicles) is a definite asset. The Forestry Youth program, operated by Land and Forest Services, Alberta Sustainable Resource Development, provides work-related forestry experience for senior high school students.

Other Requirements

Under the Regulated Forestry Profession Act and the Registered Professional Foresters Regulation, you must be registered with the College of Alberta Professional Foresters (CAPF) to use the protected titles reserved for registered members (e.g. Registered Professional Forester, Forester-In-Training). Registration is mandatory if you meet identified competency requirements and intend to practice forestry on public lands.

Employment and Advancement

Foresters are employed by the following types of organizations:

- companies that produce forest products (lumber, pulp and paper, plywood, panelboard)
- consulting companies
- educational institutions
- government departments and agencies
- power companies
- oil and mining companies.

Some foresters are self-employed private consultants.

Because competition for entry level forestry positions is often keen, related summer work experience is practically a prerequisite for permanent employment.

After several years of work in junior positions, foresters may assume responsibility for assessing data gathered by forest technologists and forestry workers, planning and implementing projects, and supervising technologists and forestry workers who do fieldwork. With additional experience, foresters may move into management and administrative positions.

Foresters who have several years of work experience also may move into related fields such as land use planning, reclamation work, vegetation control, surveying or working in provincial parks.

Foresters are part of the larger National Occupational Classification 2122: Forestry Professionals. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Forestry and Logging**
- **Professional and Technical Services**
- **Public Administration**
- **Wood Products Manufacturing**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- time of year (for seasonal jobs)
- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation**.

Over 400 Albertans are employed in the Forestry Professionals occupational group which is expected to grow 1.5 to 2.5 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Forestry Professionals occupational group working part-time or full-time earned from **$27,600 to $75,500 a year.** The average salary was **$48,900 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

College of Alberta Professional Foresters website: www.professionalforesters.ab.ca

Related Occupational Profiles

Agrologist
Ecologist
Forest Technician
Forest Technologist
Hydrologist

Related High School Subjects

Forestry; Information Processing; Language Arts; Mathematics; Physical Education; Science (Biology; and Chemistry); and Wildlife

Related Post-Secondary Fields of Study

Environment, Forestry and Related Studies

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Fundraiser

Produced FEBRUARY 2005

Fundraisers plan and organize annual fundraising programs, special gift appeals and capital campaigns to raise money for particular charitable groups or causes (e.g. community agencies, arts organizations, educational institutions, hospitals).

NOC Number(s): 5124
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **I M S**

Duties

Often working in conjunction with volunteer committees, fundraisers may be involved in a broad range of programs to raise money and other types of support for charities and other not-for-profit organizations. They may be responsible for:

- developing fund development plans and strategies
- implementing and managing fund development strategies
- raising money for current needs (programs, services, operating budgets and capital needs) as well as building endowment funds to secure long range and future funding
- recruiting and orienting volunteers
- preparing proposals and grant applications, and making presentations to service organizations, corporations, foundations and other community groups and individuals to solicit donations
- handling public relations activities such as writing news releases, newsletters and feature stories or participating in radio and television interviews
- planning and administering budgets
- conducting fund development audits and feasibility studies.

The first step in fund development is often research. Fundraisers survey a broad section of the community to test public opinion about the organization and determine what motivates giving. Then they design a strategy that will build relationships with donors and describes:

- how potential donors will be identified and approached
- the role of each staff member of the fund development program (paid and volunteer)
- how volunteers or staff will be recruited and trained
- budget allocations
- how the appeal will be presented to the public or defined target audiences
- how and when the fund development program will be carried out
- how donors and volunteers will be acknowledged.

When the fund development program has been approved, fundraisers:

- ensure compliance with regulatory requirements and organizational policies
- prepare requests for financial support from corporations, foundations and key individuals
- develop mailing lists
- solicit funds and accompany volunteers on visits with potential donors
- handle public relations tasks
- facilitate progress meetings
- build and maintain a donor database
- prepare an analysis of program results and recommend improvements for future fund development activities.

Some fundraisers work on a single program or campaign for a specific purpose, such as a new wing in a hospital or a research program, for a year or longer. Others work on several projects and programs at the same time.

Increasingly, fundraisers are specializing in areas of expertise such as:

- annual giving

- major gifts
- planned giving
- direct mail
- special events
- grant research and preparation
- capital campaigns.

Working Conditions

Fundraisers spend some time working alone writing proposals, researching prospective donors and analyzing data. However, most of their time is spent meeting people (on the phone, in groups, etc.). These discussions/presentations may be held during the day, after regular work hours or on weekends. Therefore, working days can range from six to 14 hours long. In a campaign or concerted fund development program, the work can become very hectic, adding a lot of pressure to already busy and complex schedules.

Travel may be required for some fund development programs.

Personal Characteristics

Fundraisers need the following characteristics:

- persistence and tact when dealing with others
- a high energy level, lots of enthusiasm and the ability to work under pressure
- a strong interest in the community and sense of ethics
- good communication skills in person and in writing
- the ability to lead, manage and work with volunteers
- the ability to motivate, persuade and inspire people
- the ability to manage (plan, organize and implement) complex projects.

They should enjoy co-ordinating information, finding innovative ways to handle problems, taking a methodical approach to researching information and dealing with people.

Educational Requirements

To be effective, fundraisers must be:

- knowledgeable about a wide variety of fundraising techniques
- sensitive to cultural differences in attitudes toward fundraising
- knowledgeable about local, provincial and federal legislation and regulations related to fund development activities
- able to use computers to compile and interpret statistical and financial information, present financial reports and produce gift proposals and grant applications.

People in this occupation come from a **wide variety of backgrounds**. Most employers prefer to hire fundraisers who have related post-secondary education or extensive paid or volunteer experience, preferably in a not-for-profit organization. Training through one of the professional associations or a post-secondary institution or CFRE certification is an asset (see Other Requirements).

In Alberta, education programs directly related to fund development are offered by the following post-secondary institutions:

- **Grant MacEwan College** in Edmonton offers a one year Voluntary Sector Management certificate program with a specialization in fund development. The program is offered in classroom and self-study/distance education formats. The entrance requirement is a high school diploma or equivalent and related experience. A career research essay and an interview are required.
- **Mount Royal College** in Calgary offers a four year Bachelor of Applied Nonprofit Studies degree program. The entrance requirement is the standard applied degree admission with English 30 and Social Studies. Mount Royal College also offes an eight course Certificate in Fundraising Management program through its Continuing Education Division. This is a National Program in Fundraising Education certficate program.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

The **Association of Fundraising Professionals** (AFP) regularly offers a First Course in Fundraising and a more advanced Survey Course.

Other Requirements

The CFRE Certification Board administers Certified Fund Raising Executive (CFRE) certification, which is the accepted standard for all major fundraising associations (e.g. Association of Fundraising Professionals, Association for Healthcare Philanthropy, Association of Lutheran Development Executives, Canadian Association of Gift Planners).

Applicants for CFRE certification must have at least five years of fundraising experience and pass a certification exam.

Employment and Advancement

Fundraisers are employed by all types of not-for-profit and charitable organizations and some public sector organizations including:

- health facilities and disease-specific organizations
- educational institutions
- religious organizations
- cultural and arts organizations
- social service agencies
- consulting firms that provide fundraising services on a contract basis to non-profit and charitable organizations.

Experienced fundraisers in larger organizations may advance to campaign director or fund development director positions, or specialize in specific areas (see the Duties section of this profile). Advancement may require moving to another location or employer.

Salary

(section revised OCTOBER 2005)

Salaries for fundraisers vary considerably depending on the responsibilities of the position, size of the organization and its budget for development work.

According to a **2004 Association of Fundraising Professionals** salary survey, **mean (average) and median** salaries for fundraisers ranged from **$38,500 to $64, 500 per year** depending on their qualifications and responsibilities.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Professional Occupations in Public Relations and Communications occupational group working part-time or full-time earned from **$19,800 to $104,900 a year.** The average salary was **$55,400 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Association of Fund Raising Executives (AAFRE) website: www.aafre.org

Association of Fundraising Professionals (AFP), Calgary Chapter website: www.afpcalgary.com

Association of Fundraising Professionals (AFP), Edmonton Chapter website: www.afpedmonton.ca

Association for Healthcare Philanthropy (AHP) website: www.ahp.org

Association of Lutheran Development Executives (ALDE) website: www.alde.org

Canadian Association of Gift Planners (CAGP) website: www.cagp-acpdp.org

Charity Village website: www.charityvillage.ca

Resource Centre for Voluntary Organizations (RCVO) website: www.rcvo.org

Related Occupational Profiles

Human Ecologist
Marketing Manager
Public Relations Representative
Special Event Co-ordinator
Volunteer Manager

Related High School Subjects

Communication Technology; Financial Management; Language Arts; Legal Studies; Management and Marketing; Mathematics; and Social Studies

Related Post-Secondary Fields of Study

Business, Management and Administrative Studies; and Communications

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For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Funeral Attendant

Produced NOVEMBER 2005

Funeral attendants perform a variety of duties in connection with preparing for and conducting funeral services, and maintaining funeral home facilities and equipment.

NOC Number(s): 6683.3
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus below average occupational growth in Alberta
Interests: **O M s**

Duties

Funeral attendants assist funeral directors. They may:

- transfer human remains from the place of death to the funeral home
- place the casket in the visitation room or chapel prior to a prayer or funeral service
- arrange floral displays and adjust lights around the casket
- usher mourners to church or chapel seats
- assist in closing the casket and carrying flowers to the funeral coach or limousine
- help mourners into and out of the funeral limousine
- clean and drive funeral vehicles
- issue and store funeral equipment
- perform general maintenance duties.

If there is a crematorium on the premises, funeral attendants may perform cremations and process and package cremated remains.

Working Conditions

The work requires both indoor and outdoor activity. Working hours are generally regular although evening, weekend and holiday work is sometimes required. Remains may have to be picked up at any hour.

Heavy lifting (over 25 kilograms) is required.

Personal Characteristics

Funeral attendants need the following characteristics:

- emotionally stable
- in good health
- able to communicate with people from a variety of backgrounds
- able to take instructions and carry them out.

They should enjoy helping people.

Educational Requirements

Funeral attendants are trained on the job. Those who wish to become funeral directors or embalmers should have a high school diploma (for more information, see the Embalmer and Funeral Director occupational profiles).

Employment and Advancement

Funeral attendants are employed in funeral homes. They may advance to clerical or administrative positions or take distance education programs to become embalmers or funeral directors.

Funeral attendants are employed in the **Repair, Maintenance, Personal and Other Services** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Repair, Maintenance, Personal and Other Services industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Other Elemental Service Occupations group working part-time or full-time earned from **$8,800 to $32,100 a year.** The average salary was **$16,100 a year.**

Other Sources of Information

Alberta Funeral Service Association (AFSA) website: www.afsa.ab.ca

Alberta Funeral Service Regulatory Board (AFSRB) website: www.afsrb.ab.ca

Related Occupational Profiles

Embalmer
Funeral Director

Related High School Subjects

Community Health; Language Arts; and Physical Education

Related Post-Secondary Fields of Study

Personal and Food Services

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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OCC info Alberta Occupational Profiles

Alberta Human Resources and Employment

Funeral Director

Produced NOVEMBER 2005

Funeral directors take charge of caring for the remains of people who have died, help families plan funeral services, and co-ordinate and manage arrangements for services.

NOC Number(s): 6272.1
Minimum Education: 1 year post-secondary education/training
Employment Outlook: Employment turnover plus below average occupational growth in Alberta
Interests: **D S M**

Duties

Funeral directors co-ordinate the work involved in bringing the deceased to the funeral home and making all the necessary arrangements for a funeral service. In general, they:

- provide information about funeral service options, products and merchandise
- maintain a casket display area
- prepare funeral service contracts
- arrange funeral services according to the social or religious practices of the people involved
- help bereaved families with immediate legal, social and emotional concerns
- arrange for the time and place of funerals
- contact religious leaders, file death certificates, obtain burial permits, contact the cemetery and prepare obituary notices for newspapers
- arrange transportation for mourners, pallbearers and religious leaders
- oversee the conduct of funeral services.

Working Conditions

Funeral directors sometimes work long, irregular hours that may include many evenings and weekends. They work both indoors and outdoors regardless of weather conditions.

Heavy lifting (over 25 kilograms) is required.

Personal Characteristics

Since they work in an atmosphere of grief and bereavement, funeral directors need the following characteristics:

- maturity
- emotional stability
- compassion
- tact
- sensitivity to the needs of the people they serve.

They should enjoy supervising people and co-ordinating information, consulting with families, and having clear rules and organized methods to guide their activities.

Educational Requirements

Funeral directors need good business, organizational, interpersonal and communication skills. Those considering this occupation should discuss their education options with practicing funeral directors before enrolling in an education program.

In Alberta, the following institutions offer related post-secondary education programs:

- **Mount Royal College** in Calgary offers a 12 month, full-time program and a two year, part-time (distance) Funeral Director and Embalmer certificate program through the Faculty of Continuing Education and Extension. The entrance requirement for both programs is a high school diploma and Biology 30, or equivalent. Chemistry 30 is strongly recommended.
- The **Western School of Funeral Service** in Red Deer offers:
  - a 10 month Funeral Service Certificate program for people who are not sponsored or employed by funeral homes. The entrance requirement is a high school diploma or equivalent and two letters of character reference.
  - a two year Embalmer's Licensure program and a two year Funeral Director's and Embalmer's Licensure program. Applicants must be at least 18 years of age, have a high school diploma or equivalent, two letters of character reference and be sponsored by a licensed funeral director and embalmer.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Other Requirements

Under Alberta's Funeral Services Act, funeral directors and embalmers must be licensed through the Alberta Funeral Services Regulatory Board (AFSRB). A license is not required to work as a funeral attendant under the supervision of a licensed embalmer or funeral director.

Employment and Advancement

(section revised JANUARY 2006)

Funeral directors work in funeral homes located throughout the province. The **Alberta Funeral Service Association** helps people interested in training as funeral directors to find potential employers. Re-location to a smaller, rural community may be required.

Self-employment is an option that requires a large capital investment to purchase or establish a well-furnished funeral home.

Funeral directors may use their business skills to transfer into related occupations. Many funeral directors are licensed embalmers as well.

Funeral directors are part of the larger National Occupational Classification 6272: Funeral Directors and Embalmers. In Alberta, people employed in this classification work in the **Repair, Maintenance, Personal and Other Services** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Repair, Maintenance, Personal and Other Services industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 550 Albertans are employed in the Funeral Directors and Embalmers occupational group which is expected to grow 0.7 to 1.7 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover. (**Note**: Since funeral directors form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for funeral directors.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Funeral directors' earnings vary depending on location and ownership of the funeral home.

According to the **2005 Alberta Wage and Salary Survey**, Albertans working part-time or full-time in the Funeral Directors and Embalmers occupational group earned **up to $66,100 a year**. The average salary was **$45,900 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Funeral Service Association (AFSA) website: www.afsa.ab.ca

Alberta Funeral Service Regulatory Board (AFSRB) website: www.afsrb.ab.ca

Related Occupational Profiles

Embalmer
Funeral Attendant

Related High School Subjects

Language Arts; Management and Marketing; Physical Education; Science (Biology; and Chemistry); and Social Studies

Related Post-Secondary Fields of Study

Personal and Food Services

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Furniture Mover

Produced OCTOBER 2003

Furniture movers move furniture, office supplies and equipment to and from homes, apartments, offices and storage establishments.

NOC Number(s): 7452.1
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **M O i**

Duties

Duties and responsibilities vary from one employer to another but, in general, furniture movers:

- greet customers and take an inventory of furniture and equipment being moved long distances, noting any existing defects or scratches
- cover floors and clear walkways as needed
- take apart large pieces of furniture such as beds and tables and wrap them to reduce the amount of space required and the risk of damage
- wrap and pack items, making sure that everything is secure
- courteously but briefly answer customers' questions or refer questions to office staff
- determine the order in which to load furniture to ensure that bulky or heavy items are placed in the lower part of the truck box or moving van
- work with a partner and/or use dollies and/or straps to move very heavy items such as appliances and large pieces of furniture
- carry articles and boxes to the moving van
- arrange articles in tiers to form a compact load, using padding and straps to secure articles and prevent shifting when the truck is in motion
- check to ensure that all items have been loaded and pick up floor runners
- drive moving vans to local or long distance destinations
- lay out floor runners and find where items should be placed at destination points
- accept payment from customers before unloading or bill corporate accounts
- remove straps and padding from articles and unload vans
- clean up and make sure everything has been delivered in the same condition as it was when picked up
- have customers sign the bill of lading and inventories.

If anything is found to be missing or damaged at the time of delivery, furniture movers must note the details so the company can trace the item or compensate the customer.

Furniture movers may also:

- drive long distances
- make minor repairs to furniture and equipment.

Working Conditions

A part of their day is spent riding in a van but, most of the time, furniture movers are on their feet. They frequently move items weighing over 55 kilograms and must use proper equipment and lifting techniques to avoid injury. Some furniture movers wear uniforms.

Employment may be seasonal in this occupation. The peak season is from May to September. Volumes increase at the end of each month.

Personal Characteristics

Furniture movers need the following characteristics:

- physical strength, stamina and co-ordination
- the ability to follow written and spoken instructions, and write clearly
- the ability to judge distances and space
- the ability to work independently
- the ability to organize their work and time effectively
- a customer service orientation and the ability to get along with customers who are often under stress, and work co-operatively with fellow employees
- a neat appearance.

They should enjoy handling, sorting and packing materials, using tools and equipment and arranging articles to form compact, secure loads.

Educational Requirements

There are **no standard education requirements** for this occupation but basic reading, writing and math skills are required. Related experience, a valid Alberta Class 1, 3 or 5 driver's license and an air brake endorsement are definite assets.

Furniture movers are **trained on the job**.

Employment and Advancement

(section revised JANUARY 2006)

Most furniture movers start as helpers employed for the summer months by transportation, storage and moving companies. Employers offer full-time, year-round p >sitions only to their most experienced and productive workers.

Advancement to other positions in larger moving companies (e.g. driver, dispatcher or estimator) may require a high school diploma. Some experienced furniture movers purchase their own trucks or tractor trailers and become independent operators who contract their services to long-distance movers and/or offer their services to the public.

Furniture movers are part of the larger National Occupational Classification 7452: Material Handlers. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Wholesale Trade**
- **Transportation and Warehousing**
- **Retail Trade**
- **Management, Administrative and Other Support Services**
- **Food and Beverage Products Manufacturing**
- **Wood Products Manufacturing**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 20,500 Albertans are employed in the Material Handlers occupational group which is expected to grow 1.3 to 2.3 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 260 to 480 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since furniture movers form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for furniture movers.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Material Handlers occupational group working part-time or full-time earned from **$12,000 to $82,300 a year.** The average salary was **$28,900 a year.**

Related Occupational Profiles

Shipper and Receiver
Station Attendant/Ramp Service Agent

Related High School Subjects

Logistics; and Physical Education

Related Post-Secondary Fields of Study

Driver Training; and Personal and Food Services

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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OCC info Alberta Occupational Profiles

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Gas Pipeline Operators and Maintenance Workers

Produced AUGUST 2005

Gas pipeline operators and maintenance workers monitor the day to day operations of meter and compressor stations essential to the distribution and smooth flow of gas through pipelines.

NOC Number(s): 9232
Minimum Education: High school diploma
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: **O I d**

Duties

Duties vary from one employer to another but, in general, gas pipeline operators and maintenance workers perform the following types of duties.

Gas compressor operators monitor compressor and metering equipment and maintain station areas. Gas pipeline companies may have different categories of gas compressor operators. As people learn more about compressors and metering, they are usually given more responsibilities and move up to higher levels.

Gas compressor operators usually work at several different compressor stations and meter stations. At meter stations, they may:

- operate and monitor the operation of gas wells feeding into gathering systems
- monitor, program and adjust electronic and pneumatic measuring devices
- operate and maintain dehydrators and other wellsite equipment
- record the temperature, pressure and volume of gas in the pipeline
- take samples of gas and conduct basic tests
- analyze flow characteristics
- add chemicals to flow lines as required
- submit daily reports on facility operations.

At compressor and measurement stations, they may:

- ensure that all equipment is operating normally and perform minor mechanical maintenance, adjustments and repairs
- take readings from the various gauges and instruments
- make manual adjustments to valves or equipment.

Gas compressor operators must be aware of unusual changes in compressors and metering operations. When problems occur, they are usually responsible for handling the immediate problem and recommending any necessary changes. They also may be required to paint, wash, clean and do the general housekeeping necessary at each station.

In highly automated gas pipeline systems, compressor stations and meter stations may be controlled entirely by **gas control operators** at other locations who:

- monitor meters, gauges, indicators and alarm systems that provide information about the temperature, flow, pressure and amount of gas at any one place along the pipeline or at meter or compressor stations
- keep regular records
- respond to problems when they occur.

Gas control operators' duties vary with the level of automation of the pipeline system. Those working with highly automated systems may handle problems and make adjustments by using equipment in a control room. Those working with less automated pipeline systems may instruct other personnel to make manual adjustments at the location of the problem or at another control area.

Working Conditions

Gas flows through pipelines around the clock, every day of the year, so gas pipeline operators may work shifts or be on call outside of their regular Monday to Friday working hours. Some overtime may be required.

Gas pipline maintenance workers work outdoors in all kinds of weather conditions. They also may be required to drive to a variety of stations to check and repair equipment. All operators and workers are required to lift equipment weighing up to 25 kilograms.

Gas compressor operators, pipeline operators and maintenance workers must be aware of potential hazards and know how to handle emergency situations. Hazards include fluids under high pressure and deadly hydrogen sulphide which is often a component of gas that comes directly from the well.

Personal Characteristics

Gas pipeline operators and maintenance workers need to be:

- precise
- responsible
- handy with tools
- interested in working with machines and complex equipment
- comfortable around large, noisy equipment
- able to work on their own with little supervision.

In an emergency, they must be able to evaluate the situation and respond to it quickly and correctly. The safety of a number of people and the efficient handling of emergency situations often depend on their good judgement.

Gas pipeline operators and maintenance workers should enjoy:

- controlling equipment, instruments and machinery
- analyzing information to solve problems
- working with others in a team.

Educational Requirements

Employers generally prefer to hire **high school graduates who have experience or post-secondary education** in electronics, electrical systems, mechanics or instrumentation.

In larger companies, new employees are usually hired as **utility workers**. Initially, utility workers may do many of the physical jobs such as cleaning, painting and maintaining pipeline stations. As they gain experience, they may be given additional responsibilities in other areas of compressor or meter stations. It often takes a few years before utility workers can officially be classified as gas compressor operators. During the training period, utility workers may have opportunities to take in-house and technical school courses on compressor, metering and control room operations.

Enform (formerly Petroleum Industry Training Service and Canadian Petroleum Safety Council) in Calgary and Nisku (near Edmonton) offers training programs. Contact Enform directly for information regarding course offerings and admission requirements.

Employment and Advancement

(section revised JANUARY 2006)

People looking for employment in gas pipeline operations should contact companies that operate gas pipelines, and oil and gas companies that operate small compressor stations and gas gathering systems.

Depending on their qualifications and experience, gas pipeline maintenance workers may be able to advance to gas control operator positions.

Gas pipeline operators and maintenance workers are part of the larger National Occupational Classification 9232: Petroleum, Gas and Chemical Process Operators. In Alberta, over 75 per cent of people employed in this classification work in the **Oil and Gas Extraction** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Oil and Gas Extraction industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)

- **size of the occupation.**

Over 7,000 Albertans are employed in the Petroleum, Gas and Chemical Process Operators occupational group, which is expected to grow 2.2 to 3.2 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 150 to 230 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since gas pipeline operators and maintenance workers form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for gas pipeline operators and maintenance workers.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Petroleum, Gas and Chemical Process Operators occupational group working part-time or full-time earned from **$35,400 to $115,000 a year.** The average salary was **$77,900 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

Related Occupational Profiles

Field Production Operator
Gas Plant Operator
Gas Utility Operator
Oil Pipeline Operators and Maintenance Worker
Refinery/Upgrader Process Operator

Related High School Subjects

Community Health; Electro-Technologies; Energy and Mines; Information Processing; Language Arts; Mathematics; Mechanics; Physical Education; Science (Chemistry; and Physics); and Wildlife

Related Post-Secondary Fields of Study

Engineering and Science Technologies; and Trades, Industrial and Related Training

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For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Gas Plant Operator

Produced AUGUST 2005

Gas plant operators control automated processes that convert raw natural gas into forms that can be used by consumers.

NOC Number(s): 9232
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: **O I d**

Duties

Gas plant operators are responsible for the day to day operation of natural gas plants. They monitor all the units in the plant to ensure that everything is running smoothly.

Gas plant operators' duties vary depending on the size of the gas plant. In large plants, more operators are usually required and their jobs are more specialized. Smaller gas plants require fewer people who may have a wider range of duties.

Junior operators, sometimes called trainee operators, work in units in gas plants such as the sulphur handling unit where sulphur is removed or the treating unit where water and impurities are removed and the gas is separated into components. Under the direction of unit operators, junior operators:

- perform regular checks of their unit
- keep records of temperatures, pressures, concentrations and flows
- perform basic tests on the gas and chemicals at various processing stages
- make adjustments to maintain the process or correct problems
- perform minor equipment maintenance and repair tasks
- test air samples for signs of gas or chemical leaks
- ensure that flammable and other potentially dangerous products are in safe locations.

Unit operators ensure that an entire unit is operating smoothly. They are responsible for:

- training and supervising junior operators
- conducting and assisting with equipment inspections
- starting up and shutting down plant equipment
- reviewing and compiling records taken by junior operators
- maintaining equipment and making minor repairs or requesting that repair and maintenance work be done
- running product and boiler tests
- monitoring controls
- assisting junior operators in solving problems
- assuring the safety of others in their areas.

Senior operators, sometimes called chief operators or lead hands, are responsible for the operations of a number of units and usually are the most experienced operators on their shift. Senior operators spend most of their time working in a control room where there are a number of control panels and charts and an alarm system that sounds when a problem occurs. If adjustments need to be made in a unit, or an alarm goes off, senior operators call the unit operators concerned and outline the necessary procedures.

In sour gas plants, operators are trained in emergency evacuation and firefighting procedures.

Much of the work in gas plant operations is relatively routine. Gas plant operators may go for long periods of time without a problem and then a serious failure or complication may occur. When this happens, operators must analyze the problem and act quickly and correctly.

Working Conditions

Depending on the design of the plant, junior operators may spend about half of their time outdoors. Their job requires a considerable amount of walking and lifting (up to 25 kilograms). Unit operators spend most of their time indoors but may be required to work outside when there are problems with outdoor equipment. Senior operators spend much of their time in the control room.

Gas plants operate 24 hours a day so operators are required to work 8 or 12 hour shifts. Operators must follow safety precautions to avoid injuries resulting from exposure to toxic chemicals and gases.

Personal Characteristics

Gas plant operators need the following characteristics:

- mechanical aptitude
- mathematical ability
- good eye-hand co-ordination and manual dexterity
- good vision
- excellent hearing
- good communication skills
- good judgement
- agility and endurance.

They should enjoy controlling equipment, instruments and machinery, analyzing information to solve problems and working with others in a team.

Educational Requirements

In gas plants that use generating sources other than steam, operators may not be required to meet specific formal education requirements. However, a high school diploma with courses in mathematics, chemistry and physics is a definite asset.

Gas plants that have power boilers or sulphur recovery units require operators to have an Alberta Power Engineering Certificate. In Alberta, power engineers are certified through the **Alberta Boiler Safety Association**. There are five levels of certification, advancing from a Fifth Class certificate to a First Class certificate. Each level of certification has different training and employment experience requirements. For information about power engineering programs and certification requirements, see the Power Engineer occupational profile.

Some companies provide in-house training opportunities to help gas plant operators advance to more senior positions. First aid and safety training also may be required, especially in sour gas plants.

Post-secondary institutions that offer power engineering programs also may offer gas plant operations training by distance education (computer-managed learning or modularized materials). Admission requirements vary ranging from completion of Grade 10 math to a high school diploma with Grade 12 math and physics (or Science 30).

Other programs and courses related to gas plant operations are offered by the following institutions:

- **Enform** (formerly Petroleum Industry Training Service and Canadian Petroleum Safety Council) in Calgary and in Nisku (near Edmonton) offers training courses for people already employed in the oil and gas industry.
- **Lakeland College** in Lloydminster offers a Gas Process Operations certificate program. The entrance requirement is a high school diploma with English Language Arts 30-1 or English 30 (or 65 per cent in ELA 30-2 or English 33), Pure Math 30 or Math 30 (or 65 per cent in Applied Math 30 or Math 33), and Physics 20 or Chemistry 20 (or 65 per cent in Science 20).
- The **Northern Alberta Institute of Technology (NAIT)** in Fairview offers a Gas Process Operations certificate program. The entrance requirement is at least a C in Grade 10 English and math, or equivalent.
- The **Southern Alberta Institute of Technology (SAIT)** in Calgary offers a one year Process Operations certificate program that includes four weeks of practicum at plant sites. The entrance requirement is 70 Alberta high school credits (Grade 11) with English 20 or 23 or equivalent. SAIT also offers a Gas Process Operations certificate program by distance education.

For information about two year diploma programs in chemical and petroleum engineering technology, see the Chemical Engineering Technologist and Petroleum Engineering Technologist profiles.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

(section revised JANUARY 2006)

Gas plant operators are employed by oil and gas companies in gas plants which are generally located as close as possible to gas fields. There are hundreds of gas plants in Alberta: some near major cities, others in remote areas.

Individuals often start in field positions or as junior operators. Advancement to more senior positions such as unit operator and senior operator usually depends on experience and education. In gas plants where power engineering certificates are required, individuals may need higher certification to advance to more senior positions.

Senior operators may have the opportunity to move into supervisory positions, then advance to management positions located either at the plant or in major cities.

Gas plant operators are part of the larger National Occupational Classification 9232: Petroleum, Gas and Chemical Process Operators. In Alberta, over 75 per cent of people employed in this classification work in the **Oil and Gas Extraction** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Oil and Gas Extraction industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 7,000 Albertans are employed in the Petroleum, Gas and Chemical Process Operators occupational group, which is expected to grow 2.2 to 3.2 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 150 to 230 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since gas plant operators form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for gas plant operators.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Salaries for gas plant operators vary depending on the plant and the qualifications of the operator.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Petroleum, Gas and Chemical Process Operators occupational group working part-time or full-time earned from **$35,400 to $115,000 a year.** The average salary was **$77,900 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Boilers Safety Association (ABSA) website: www.albertaboilers.com

Related Occupational Profiles

Gas Pipeline Operators and Maintenance Workers
Power Engineer
Refinery/Upgrader Process Operator

Related High School Subjects

Community Health; Electro-Technologies; Energy and Mines; Information Processing; Language Arts; Mathematics; Physical Education; and Science (Chemistry; and Physics)

Related Post-Secondary Fields of Study

Trades, Industrial and Related Training

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Gas Utility Operator

Apprenticeship and Industry Training

Produced FEBRUARY 2006

Gas utility operators install and service gas utility pipeline systems that transport natural gas from its source to points of use such as building meter sets.

NOC Number(s): 7442.2
Minimum Education: Designated Occupation
Employment Outlook: Employment turnover plus below average occupational growth in Alberta
Interests: **M O i**

Duties

Gas utility operators may work on a particular type or a combination of the following systems:

- gas transmission distribution systems under various levels of pressure
- gas mains and services
- pressure controllers and regulators
- gas meter and measuring.

Their duties and responsibilities vary from one job to another but, in general, they:

- interpret prints and specifications to determine the location, size and materials required to install gas mains
- install and maintain cathodic protection to prevent corrosion in steel and aluminum pipes
- locate underground gas systems and conduct routine surveys of gas mains and distribution lines to detect and locate escaping gas
- carry out routine gas system maintenance functions
- operate and maintain regulating, measuring and odourizing facilities
- provide information about underground gas distribution lines and observe excavation work to ensure that underground gas facilities are protected
- investigate reports of gas leaks to determine the exact location and extent of leaks
- use equipment to expose gas lines and repair damaged pipes
- use laptop computers to keep records of work performed and the location and condition of pipelines.

Working Conditions

Gas utility operators work both indoors and outdoors at physically demanding tasks. Operators generally work a 40-hour work week but overtime may be required during emergencies or to meet construction deadlines.

Gas utility operators often work with explosive gases and power tools. To avoid injury, gas utility operators must follow safety codes and regulations and, during emergency situations, follow the specified procedures.

Operators may be required to lift items weighing up to 25 kilograms.

Personal Characteristics

Gas utility operators need the following characteristics:

- mechanical ability
- manual dexterity
- good customer service skills
- the ability to get along with fellow workers.

They should enjoy being physically active and working with little direction or supervision.

Educational Requirements

Gas utility operator is a **designated occupation** in Alberta. This means that training and certification are not required but trainees can apply to **Alberta Apprenticeship and Industry Training** for an Alberta Occupational Certificate. There is no minimum education requirement but, it is recommended that applicants have Alberta Math 10, Science 10 and English 10.

To **register**, trainees must find a suitable employer who is willing to hire a trainee. Most employers prefer to hire high school graduates or people who already have related training or experience (e.g. gasfitters). Prospective gas utility operators may be first hired as labourers and, if their work is satisfactory, offered trainee positions when they become available.

The **term of training** for a gas utility operator is a minimum of 24 months that include at least 3,400 hours of work experience.

Trainees who have related training or work experience may qualify for credit or certification.

Employment and Advancement

Gas utility operators are employed by gas utility and distribution companies and firms that contract services to those companies.

Experienced operators may advance to supervisory positions but further advancement opportunities are limited. Certified Alberta gas utility operators who have the supervisory or management skills required by industry may apply for an Achievement in Business Competencies Blue Seal by contacting Alberta Apprenticeship and Industry Training.

Gas utility operators are part of the larger National Occupational Classification 7442: Waterworks and Gas Maintenance Workers. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Utilities**
- **Construction**
- **Transportation and Warehousing**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- time of year (for seasonal jobs)
- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 600 Albertans are employed in the Waterworks and Gas Maintenance Workers occupational group which is expected to grow 0.7 to 1.7 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover. (**Note**: Since gas utility operators form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for gas utility operators.) Employment prospects are best for those willing to work in smaller communities.

Turnover rates within major gas utility companies are relatively low.

Salary

According to the Alberta Occupational Training Committee for this designated occupation, experienced gas utility operators earn from **$12 to $28 an hour plus benefits** (2005 estimate).

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Waterworks and Gas Maintenance Workers occupational group working part-time or full-time earned from **$25,100 to $81,300 a year.** The average salary was **$49,300 a year.**

Other Sources of Information

Alberta Apprenticeship and Industry Training website: www.tradesecrets.org

Construction Sector Council website: www.csc-ca.org

Related Occupational Profiles

Gas Pipeline Operators and Maintenance Workers
Gasfitter
Instrument Technician
Instrumentation Engineering Technologist
Materials Engineering Technologist
Steamfitter-Pipefitter

Related High School Subjects

Construction Technologies; Energy and Mines; Information Processing; Language Arts; Mathematics; Physical Education; Science (Physics); and Wildlife

Related Post-Secondary Fields of Study

Trades, Industrial and Related Training

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Gasfitter

Apprenticeship and Industry Training

Produced FEBRUARY 2006

Gasfitters size, install, test, adjust and service natural gas and propane equipment ranging from residential furnaces to industrial boilers.

NOC Number(s): 7253
Minimum Education: Apprenticeship Trade - Grade 9
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: O M I

Duties

Gasfitters employed by:

- **utility companies** repair and extend gas mains, and repair and service pipes and fittings between mains and buildings
- **propane distributors** install and service propane vaporizers, temporary heating equipment, propane metering and dispensing equipment, and propane pumping equipment
- **mechanical and service companies** install and maintain piping and appliances in residential, commercial and industrial buildings.

Duties vary from one position to another but, in general, gasfitters:

- determine the size and type of pipe, equipment, appliances and devices to use
- test, identify and select the correct piping and related materials
- measure, cut, thread and assemble pipe using tools such as pipe cutters, pipe threading machines and pipe vices
- install vents and flues and connect gas-consuming appliances such as ranges, dryers, barbecues, furnaces, boilers, space heaters, radiant and forced air heaters
- test and replace defective equipment or components
- start up and adjust new or repaired equipment
- prepare reports.

Gasfitters may also:

- install and repair underground gas mains and distribution pipes
- respond to calls about escaping gas
- assist in the investigation of gas fires and explosions
- convert motor vehicles or appliances to use other fuels (e.g. propane or natural gas)
- install and service propane and natural gas filling stations.

Gasfitters must follow codes, regulations and accepted safety practices.

Working Conditions

Gasfitters work both indoors and outdoors at physically demanding tasks. They work a 40-hour week with overtime sometimes required for emergencies or to meet construction deadlines. There is some risk of injury when working with explosive gases and power tools. Safety training is generally provided.

Gasfitters may be required to lift items weighing over 25 kilograms.

Personal Characteristics

Gasfitters need the following characteristics:

- the skill to diagnose problems
- mechanical, electrical and electronic aptitude
- manual dexterity

- good customer services skills.

They should enjoy working with little direction or supervision.

Educational Requirements

To work in Alberta, gasfitters must be registered apprentices or certified journeymen.

To **register** with **Alberta Apprenticeship and Industry Training**.

- **Gasfitter 1st Class** apprentices must:
  - have at least an Alberta Grade 9 education (or equivalent) or pass an entrance exam
  - find a suitable employer who is willing to hire and train an apprentice. Most employers prefer to hire high school graduates and may select apprentices from among their current employees.
- **Gasfitter 2nd Class** apprentices must:
  - have a Plumber or Steamfitter-Pipefitter trade certificate
  - find a suitable employer who is willing to hire and train an apprentice. Most employers prefer to hire high school graduates and may select apprentices from among their current employees

The **term of apprenticeship** for:

- **gasfitter 1st class** is three years (three 12-month periods) that include a minimum of 1,500 hours of on-the-job training and eight weeks of technical training each year.
- **gasfitter 2nd class** is two years (two 12-month periods) that include a minimum of 1,500 hours of on-the-job training and eight weeks of technical training each year.

High school students can become apprentices and gain credits toward apprenticeship training and a high school diploma at the same time through the Registered Apprenticeship Program (RAP).

Applicants who have related training or work experience may be eligible for credit or certification.

Technical training is arranged by Alberta Apprenticeship and Industry Training and is currently offered at:

- the Northern Alberta Institute of Technology (NAIT) in Edmonton
- the Southern Alberta Institute of Technology (SAIT) in Calgary

Pre-employment programs for prospective apprentices and continuing education programs for journeymen may be offered on an as needed basis by the institution(s) listed above or other schools.

Employment and Advancement

Gasfitters are employed in the construction, manufacturing and utilities industries.

Experienced gasfitters may advance to supervisory positions such as foreman, maintenance manager or service manager, or start their own contracting business. Alberta certified journeyman gasfitters who have the supervisory or management skills required by industry may apply for an Achievement in Business Competencies Blue Seal by contacting Alberta Apprenticeship and Industry Training.

In Alberta, over 75 per cent of people employed as gasfitters work in the following industries:

- **Construction**
- **Utilities**
- **Oil and Gas Extraction**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- time of year (for seasonal jobs)
- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

About 550 Albertans are employed in the Gas Fitters occupational group which is expected to grow 1.5 to 2.5 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Apprentice **gasfitters 1st class** earn at least 50 per cent of the journeyman wage rate in their place of employment in the first year, 60 per cent in the second year and 80 per cent in the third.

Apprentice **gasfitters 2nd class** earn at least 90 per cent of the journeyman wage rate in their place of employment in the first year and 95 per cent in the second.

According to the Alberta Provincial Apprenticeship Committee for this trade, journeyman wage rates for the classes vary, but generally range from **$18 to $24 an hour plus benefits** (2004 estimate).

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Gas Fitters occupational group working part-time or full-time earned from **$21,800 to $76,400 a year.** The average salary was **$48,600 a year.**

Other Sources of Information

Alberta Apprenticeship and Industry Training website: www.tradesecrets.org

Alberta Construction Industry "Trade Up!" website: www.careersconstruction.com

Calgary Construction Association website: www.cca.cc

Construction Sector Council website: www.csc-ca.org

Related Occupational Profiles

Gas Utility Operator
Instrument Technician
Plumber
Recreation Vehicle Service Technician
Refrigeration and Air Conditioning Mechanic
Sprinkler Systems Installer
Steamfitter-Pipefitter

Related High School Subjects

Construction Technologies; Design Studies; Energy and Mines; Fabrication Studies; and Physical Education

Related Post-Secondary Fields of Study

Trades, Industrial and Related Training

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Gemmologist

Produced APRIL 2003

Gemmologists apply their knowledge of natural gemstones, synthetics and imitations to identify and grade coloured stones and diamonds.

NOC Number(s): 7344.1
Minimum Education: High school diploma
Employment Outlook: Employment turnover plus below average occupational growth in Alberta
Interests: **O I M**

Duties

Duties vary from one position to another in this occupation but, in general, gemmologists:

- identify different types of gemstones (e.g. diamond, emerald, jade, ruby, topaz) and their synthetic counterparts
- differentiate between natural gems and stones that have been treated to enhance their colour or clarity or to stabilize them via plastic impregnation
- grade gemstones and pearls
- identify metals and differentiate between antiques and copies.

To identify gems, gemmologists may:

- examine surface and internal characteristics under magnification using a loupe or microscope
- use equipment such as a polariscope, dichroscope or polarising filter to detect optical characteristics
- measure refractive indices and, in some cases, interpret optical character and optic sign using a refractometer
- analyze absorption and fluorescent spectra using a direct vision spectroscope
- measure specific gravity by using hydrostatic or heavy liquid immersion techniques or by using calibrated measuring tools and calculating the weight of mounted stones
- use other more sophisticated testing procedures to identify synthetic and treated gem materials (e.g. radiology for pearls).

Depending on where they work, gemmologists may have a variety of additional responsibilities. For related information, see the Jeweller occupational profile.

Working Conditions

Gemmologists may work full-time, part-time, or on a contract or freelance basis. Travel is often required for those involved in selling wholesale gems or jewellery to retailers.

Personal Characteristics

Gemmologists need the following characteristics:

- honesty and integrity
- good colour vision
- manual dexterity
- good communication skills
- detail-oriented
- interested in geology, physics and chemistry
- able to work independently or as part of a team
- able to meet deadlines.

Gemmologists should enjoy using tools and instruments to perform tasks requiring precision, analyzing information to appraise gemstones, and having clear guidelines and organized methods for their work.

Educational Requirements

Training in gemmology generally involves **a combination of formal instruction and experience**. Employers prefer to hire gemmologists who have at least a Grade 12 education and a diploma in gemmology. Computer skills and courses in geology, chemistry and physics are definite assets.

Prospective students are advised to discuss their career plans with practising gemmologists before choosing a training route. Training programs are offered in a variety of formats (full-time classroom instruction, seminars and distance education) by a variety of sources, including the following:

- the **Canadian Gemmological Association** in Toronto and Vancouver
- the **Canadian Institute of Gemmology (CIG)** in Vancouver
- the **Gemmological Association and Gem Test Lab (GAGTL)** of Great Britain
- the **Gemological Institute of America** in Carlsbad, California
- **George Brown College of Applied Arts and Technology** in Toronto
- **Granton Institute of Technology** in Toronto
- the **H.R.D. Diamond High Council of Belgium**.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

(section revised JANUARY 2006)

Most gemmologists are self-employed. They may work for:

- retail jewellers
- appraisal laboratories
- wholesalers of diamonds and coloured gems
- jewellery manufacturers
- auction houses, pawnbrokers and other buyers and sellers of estate jewellery.

Gemmologists often become jewellery appraisers. Advancement in this occupation generally takes the form of establishing a business and building a larger customer base. Becoming an independent gem dealer requires a large financial investment.

With experience and additional training, gemmologists may become appraisers who apply their knowledge of the market value of gemstones to estimate their worth.

Gemmologists are part of the larger National Occupational Classification 7344: Jewellers, Watch Repairers and Related Occupations. In Alberta, most people employed in this classification work in the following industries:

- **Repair, Maintenance, Personal and Other Services**
- **Retail Trade**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

About 300 Albertans are employed in the Jewellers, Watch Repairers and Related Occupations group which is expected to expected to grow 0.5 to 1.5 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover. (**Note**: Since gemmologists form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for gemmologists.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised MAY 2004)

Gemmologists' earnings vary depending on the scope of their responsibilities, location, the method of payment and the gemmologist's qualifications. Many gemmologists work on a commission basis.

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

Related Occupational Profiles

Geologist
Jeweller
Personal Property/Equipment Appraiser

Related High School Subjects

Enterprise and Innovation; Information Processing; Language Arts; Mathematics; Science (Chemistry; and Physics); and Social Studies

Related Post-Secondary Fields of Study

Business, Management and Administrative Studies; and Personal and Food Services

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For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Geneticist

Produced NOVEMBER 2005

Geneticists conduct research into the biochemical and physiological aspects of heredity, particularly the role of deoxyribonucleic acid (DNA), and carry out cytogenetic or molecular tests to aid in diagnosing disease.

NOC Number(s): 2121.2
Minimum Education: 6 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **I O D**

Duties

Research geneticists may specialize in many different areas including:

- biomedical genetics - the study of normal and abnormal genetic factors at the level of chromosomes, biochemistry or molecules (for the diagnosis and treatment of biochemical genetic conditions)
- developmental genetics - the study of the genetic control of cells and the processes by which they form multi-cellular organisms (normally during development or abnormally in cancer)
- biochemical and molecular genetics - the study of the basis of gene activity, transmission and mutation (including the manipulation of genes)
- population genetics - the study of natural variation and the processes of inheritance and evolution within populations of organisms including tracing human histories and geneologies
- plant and animal genetic research to serve human purposes (for example, to develop pharmaceuticals or improve crop yields or disease resistance)
- research with taxonomists to solve species identification and relationship problems
- the use of genetic markers in forensic analysis.

For information about geneticists involved in developing and improving industrial processes (for example, for the production of drugs, antibiotics or vaccines), see the Biotechnologist occupational profile.

Medical geneticists study the causes, prevention and treatment of human genetic conditions. Under the supervision of medical geneticists, genetic counsellors obtain family histories and hospital records, and provide advice regarding the risks involved in some genetic situations. Clinical geneticists/physicians are directly involved in patient care.

Other geneticists may be involved in field biology or laboratory investigations with microbes, plants or animals. This may involve working at a bench, building mathematical models or using computer simulations.

Working Conditions

Geneticists work in a laboratory environment with hazardous substances such as chemicals and radioactive materials. They sometimes work evenings and weekends to complete experiments.

Medical geneticists work in university medical centres or hospitals.

Personal Characteristics

Geneticists need the following characteristics:

- an interest in biology and biochemistry
- problem solving skills
- curiosity and imagination
- persistence and patience
- good communication skills
- manual dexterity for performing experiments
- the ability to pay close attential to detail
- a willingness to do the reading required to keep abreast of new developments and discoveries.

Some geneticists must be willing to work with animals (both invertebrate and vertebrate).

All geneticists should enjoy synthesizing information, finding innovative solutions to problems, using sophisticated instruments and equipment to perform tasks requiring precision, and supervising the work of others.

Educational Requirements

Geneticists must have an advanced degree in genetics. Most geneticists begin their studies in a four year Bachelor of Science degree program in a biological science, then go on to complete a master's or doctoral (PhD) degree in genetics **or** a Medical Doctor degree followed by specialty training and further study in a genetics program.

Graduates of B.Sc. degree programs in genetics or biochemistry may work as genetics technicians. Graduates of master's degree programs may work in high level technical positions. Genetic counsellors need a master's degree specifically in genetic counselling. A PhD is required to work as an independent researcher or teach at the university level.

In Alberta, the **University of Alberta** in Edmonton offers B.Sc., M.Sc. and PhD degree programs in genetics and M.Sc. and PhD programs in medical genetics. Graduate studies are offered in the Department of Biological Science and the Department of Medical Genetics.

The **University of Calgary** offers B.Sc., M.Sc. and PhD degree programs in cellular, molecular and microbial biology through the Department of Biological Sciences, a Bachelor of Health Sciences degree program with a specialization in biomedical science through the Faculty of Medicine, and M.Sc. and PhD programs administered by the Department of Biochemistry and Molecular Biology.

For information about bachelor's degree programs in related fields such biochemistry, microbiology and medicine see the Biochemist, Microbiologist and Physician occupational profiles.

Entrance requirements for suitable bachelor's degree programs vary from one program and institution to another but, in general, include a high school diploma with a competitive average (ranging from 65 to 80 per cent) in English Language Arts 30-1 (or English 30), Pure Math 30 (or Math 30), Biology 30, Chemistry 30 and one other approved 30 level subject (Physics 30 and Math 31 recommended).

For current information about programs, entrance requirements and mature student admission policies, please check post-secondary calendars or websites.

University transfer programs and bachelor's degree programs in biological sciences are offered by post-secondary institutions located throughout Alberta. It is the student's responsibility to ensure that the transfer courses they choose to take will be accepted for credit at the institution to which they wish to transfer.

Other Requirements

Professional Biologist is a protected title under Alberta's Professional and Occupational Associations Registration Act. This means that to call yourself a Professional Biologist, you must be a registered member of the Alberta Society of Professional Biologists (ASPB). You do **not** have to be registered with ASPB if you do not call yourself a Professional Biologist.

Employment and Advancement

(section revised JANUARY 2006)

Geneticists are employed by the following types of organizations:

- universities
- government departments
- hospitals
- pharmaceutical companies
- agribusiness companies
- biotechnology companies.

Geneticists are part of the larger National Occupational Classification 2121: Biologists and Related Scientists. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Professional and Technical Services**
- **Public Administration**
- **Health Care and Social Assistance**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

About 1,100 Albertans are employed in the Biologists and Related Scientists occupational group which is expected to grow 1.3 to 2.3 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 10 to 30 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since geneticists form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for geneticists.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Biologists and Related Scientists occupational group working part-time or full-time earned from **$17,000 to $99,400 a year.** The average salary was **$64,600 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Canadian Council for Human Resources in the Environment Industry website: www.cchrei.ca

Genetics Society of Canada website: life.biology.mcmaster.ca/%7Ebrian/GSC/

Royal College of Physicians and Surgeons of Canada website: rcpsc.medical.org

Related Occupational Profiles

Agrologist
Biochemist
Biologist
Biotechnologist
Ecologist
Food Scientist
Microbiologist
Pharmacologist
Physician
Physiologist
Toxicologist

Related High School Subjects

Agriculture; Language Arts; Mathematics; Science (Biology; Chemistry; and Physics); and Wildlife

Related Post-Secondary Fields of Study

Agriculture and Related Technologies; Environment, Forestry and Related Studies; Health Care and Medical Sciences; and Sciences

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Geographer

Produced AUGUST 2005

Geographers study the interactions between the distinctive, dynamic features and characteristics of the biosphere and of the human organization of activity within it. They may specialize in particular phenomena or regions at various scales of analysis.

NOC Number(s): 4169.3
Minimum Education: 4 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **I D M**

Duties

Geographers may be engaged in a wide range of studies and activities. For example, they may provide consulting services in fields such as resource development and management, business location and market area analysis, environmental hazards, regional cultural history or urban social planning. They may:

- provide advice on environmental issues
- identify new retail site locations
- prepare regional health service plans
- study the effects of pollutants and epidemics on people in particular places
- work in international development agencies or tourism agencies
- provide geographical information systems support to the private and public sector
- provide advice on heritage site plans
- work with land use or socio-economic planners (for more information, see the Urban, Regional and Park Planners occupational profile)
- teach or conduct research relating to climate, landforms, soils, vegetation, transportation systems, urban structure, resources, industry or different geographical regions.

Geographers use laboratory, statistical, interview and field techniques to collect data. They often use computerized data analysis, geographical information systems, qualitative survey material or remotely-sensed imagery. For example, Geographic Information Systems (GIS) and Image Analysis Systems (IAS) technologies are used for planning and resource management.

Working Conditions

Geographers work in offices, laboratories and classrooms. Those who also conduct field studies may experience a wide variety of environments ranging from Arctic tundra to Third World countries depending on their specialization. In the field, hours of work depend on the weather and the duration of the field season.

Personal Characteristics

Geographers need the following characteristics:

- the ability to analyze and synthesize information
- strong oral and written communication skills
- problem solving skills.

They should enjoy analyzing data and finding innovative solutions to problems, consulting with others and making decisions, and taking a methodical approach to information gathering.

Educational Requirements

The minimum education requirement for geographers is a **bachelor's degree in geography**. To specialize in a particular area of geography, a master's degree or a doctoral (PhD) degree is required.

In Alberta, the following post-secondary institutions offer geography-related degree programs.

- The **Southern Alberta Institute of Technology (SAIT)** in Calgary offers a two year Bachelor of Applied Technology Geographic Information Systems degree program that includes a one year practicum. The entrance requirement is a two year diploma from a recognized Canadian college or technical institute or equivalent.
- The **University of Alberta** in Edmonton offers four year Bachelor of Arts (BA) degree programs in geography.The entrance requirement is an average from 65 to 80 per cent in English Language Arts 30-1 or English 30, a 30-level language other than English or Pure Math 30 or Math 30, and three other approved 30-level subjects (Social Studies 30 recommended). The University of Alberta also offers Master of Arts (MA), Master of Science (M.Sc.) and PhD programs in geography.
- The **University of Calgary** offers four year and five year (co-op) BA and Bachelor of Science (B.Sc.) programs in geography. The entrance requirement is a high school diploma or equivalent with an average of at least 70 per cent in English Language Arts 30-1 or English 30, Pure Math 30 or Math 31, and three other approved 30-level subjects. The University of Calgary also offers MA, M.Sc. and PhD programs in geography, and a one year course-based Master of Geograhic Information Systems (Geography) program.
- The **University of Lethbridge** offers four year degree programs and five year combined degree programs in geography with an optional concentration in Geographical Information Science (GIS). The entrance requirement is an average of at least 65 per cent in English Language Arts 30-1 or English 30, Pure Math 30 or equivalent, two other 30-level subjects and a fifth Grade 12 subject. Pure Math 30 or Physics 30 may be required or recommended for courses the B.Sc. program. The University of Lethbridge also offers MA and M.Sc. programs in geography.

Post-secondary institutions throughout the province offer university transfer programs that allow students to apply up to two years of study toward university bachelor's degree programs. It is the student's responsibility to ensure that the courses they choose to take will be accepted for credit at the institution to which they wish to transfer.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

(section revised JANUARY 2006)

Geographers may be employed as environmental consultants, resource managers, urban or regional planners, geography specialists or advisors. They may work for:

- municipal, provincial or federal governments
- private consulting firms doing work on retail siting, marketing and health care planning
- organizations involved in heritage-site planning
- post-secondary institutions
- environmental research agencies
- electronic mapping and graphic design companies
- geographic information systems (GIS) groups
- organizations in the travel and tourism industry.

Geographers may specialize in areas such as climatology, environmental studies, Third World development, transportation studies or medical geography. They also may advance to supervisory or administrative positions.

Geographers are part of the larger National Occupational Classification 4169: Other Professional Occupations in Social Science. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Professional and Technical Services**
- **Public Administration**
- **Educational Services**
- **Health Care and Social Assistance**

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)

- **size of the occupation.**

Over 350 Albertans are employed in the Other Professional Occupations in Social Science occupational group which is expected to grow 1.5 to 2.5 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover. (**Note**: Since geographers form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for geographers.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Salaries vary considerably depending on the geographer's responsibilities and qualifications.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Other Professional Occupations in Social Science occupational group working part-time or full-time earned from **$31,800 to $79,600 a year.** The average salary was **$54,900 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

American Association of Geographers (AAG) website: www.aag.org

Canadian Association of Geographers (CAG) website: www.cag-acg.ca

Royal Canadian Geographical Society (RCGS) website: www.rcgs.org

Related Occupational Profiles

Demographer
Geomatics/Surveying Engineer
Hydrologist
Interpretive Naturalist
Mapping Technologist

Related High School Subjects

Design Studies; Information Processing; Language Arts; Legal Studies; Mathematics; Physical Education; Science (Biology; Chemistry; and Physics); and Social Studies

Related Post-Secondary Fields of Study

Sciences; and Social Sciences, Law and Religious Studies

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Geological and Geophysical Technologist

Produced OCTOBER 2004

Geological and geophysical technologists may work independently or with a team of geologists, geophysicists, mining engineers or petroleum engineers.

NOC Number(s): 2212.1
Minimum Education: 2 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **O I d**

Duties

Geological and geophysical technologists may work in exploration, production or management.

In exploration, they:

- prepare base maps
- interpret geological data from aerial photos
- organize and conduct geophysical and geochemical surveys
- prepare or supervise the preparation of samples and perform laboratory tests
- prepare, transcribe and analyze data
- interpret data and report results
- interpret well log and core data for cross-sections and geological maps
- use computers to record and process geological and seismic data and prepare maps
- assist with two, three and four dimensional studies and interpretations
- link all available data, including seismic and well data, to create geologic maps
- interpret hydrogeological maps, reports and studies.

In production, they:

- prepare and maintain subsurface and surface survey plans
- conduct mineral grade control studies and maintain databases
- conduct soil and groundwater field tests
- monitor contaminant migration and dispersion
- determine acquifer characteristics and water quality
- recommend environmental assessment and remediation techniques
- supervise equipment operators and other technologists.

In management, they:

- maintain geological and geophysical databases for resource companies
- prepare cost and budget estimation for various resource projects
- supervise logistical manoeuvers related to exploration programs.

In addition to these general duties, **geological technologists** may:

- analyze core samples from drilling
- supervise water well exploration, drilling and well completions
- help evaluate possible mining locations
- assess the environmental impact of development projects on subsurface materials.

In addition to the general duties listed above, **geophysical technologists** may:

- take and record magnetic, electromagnetic, gravity and resistivity measurements
- conduct or direct geophysical prospecting field trips, exploratory drilling, well logging programs and seismic crew operations

- operate and maintain geophysical survey and well logging instruments and equipment
- process seismic data, which includes operating computers to record and process seismic data, writing reports and preparing maps based on the information obtained.

Working Conditions

Geological and geophysical technologists often work in laboratories and offices that are located in major cities or field offices. Lab work can be noisy, dusty and involve the use of chemicals. Safety precautions include using earplugs and safety shoes, and working in rooms that have special ventilation systems.

Some technologists spend three to six months a year working in the field, sometimes in remote locations. They may travel for long distances and work at locations (e.g. oil and gas well sites and plants) where safety precautions are required to avoid injury. Considerable overtime and weekend work may be required.

Technologists may be required to lift equipment and samples weighing up to 25 kilograms.

Personal Characteristics

Geological and geophysical technologists need the following characteristics:

- excellent analytical and creative problem solving skills
- an aptitude for working with computers
- good organizational skills
- good oral and written communication skills
- good judgement.

They should enjoy working with instruments and equipment at tasks requiring precision, analyzing data and supervising the work of others.

Educational Requirements

(section revised MAY 2005)

In general, a related **two year technology diploma or a Bachelor of Science (B.Sc.) degree** is required to work as a geological or geophysical technologist in Alberta.

In Alberta, the following post-secondary institutions offer two year technology diploma programs:

- The **Northern Alberta Institute of Technology (NAIT)** in Edmonton offers two year technology diploma programs with specializations in geological technology and petroleum engineering technology. The admission requirement for both programs is a high school diploma or equivalent with English 30 or 33, Pure Math 30 or Math 30 (or 60 per cent in Math 33) and one of: Science 30, Physics 30 or Chemistry 30.
- The **Southern Alberta Institute of Technology (SAIT)** in Calgary offers two year technology diploma programs in exploration information technology and petroleum engineering technology. The admission requirement for both programs is a high school diploma with English 30 or 33, and Pure Math 30 or Math 30. The exploration information technology program also requires a 20 level science. The petroleum engineering technology program requires Chemistry 30, Science 30 or Physics 20.

The **University of Alberta** in Edmonton and the **University of Calgary** offer four year B.Sc.degree programs in earth and atmospheric sciences, geology and geophysics. Admission requirements vary from one program to another but generally include a high school diploma with an average of at least 70 per cent in English 30, Math 30, Chemistry 30, and two other appropriate Grade 12 subjects (Math 31 and Physics 30 recommended).

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Other Requirements

Certification is voluntary.

The Alberta Society of Engineering Technologists (ASET) offers certification for graduates of recognized education programs who have two years of successful experience in industry.

Employment and Advancement

(section revised JANUARY 2006)

Geological and geophysical technologists are employed by:

- oil and gas companies
- resource service companies
- engineering consulting firms
- mining companies
- environmental consulting companies
- environmental equipment and technology companies
- government departments and agencies.

Experienced geological and geophysical technologists may advance to supervisory and management positions.

Geological and geophysical technologists are part of the larger National Occupational Classification 2212: Geological and Mineral Technologists and Technicians. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Oil and Gas Extraction**
- **Professional and Technical Services**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation**.

About 3,600 Albertans are employed in the Geological and Mineral Technologists and Technicians occupational group which is expected to grow 1.6 to 2.6 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 50 to 100 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since geological and geophysical technologists form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for geological and geophysical technologists.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised SEPTEMBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Geological and Mineral Technologists and Technicians occupational group working part-time or full-time earned from **$21,300 to $117,000 a year.** The average salary was **$56,700 a year.**

For more detailed information, see ASE - Annual Salary Surveys.

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDINFO website: www.alis.gov.ab.ca/edinfo

Alberta Society of Engineering Technologists (ASET) website: www.aset.ab.ca

Related Occupational Profiles

Exploration Geophysicist
Geologist
Hydrometric Technician/Technologist
Petroleum Engineering Technologist
Seismic Observer

Related High School Subjects

Design Studies; Energy and Mines; Information Processing; Language Arts; Mathematics; Physical Education; and Science (Chemistry; and Physics)

Related Post-Secondary Fields of Study

Engineering and Science Technologies; and Sciences

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Geologist

Produced JUNE 2004

Geologists study the nature and history of the Earth's crust and apply their knowledge in exploring for minerals and hydrocarbons (e.g. oil and gas), developing resources for production, building engineering foundations and stable slopes, finding and evaluating ground water supplies and conducting environmental investigations.

NOC Number(s): 2113
Minimum Education: 4 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **I O D**

Duties

Geologists often work in teams with geophysicists (see the Exploration Geophysicist occupational profile), engineers (see the Petroleum Engineer and other engineering occupational profiles) and technologists (see the Geological and Geophysical Technologist occupational profile).

In general, geologists:

- collect and interpret rock samples and cores
- classify fossilized life forms, rocks and minerals
- collect and analyze soil and sediment samples in geochemical surveys
- study the effects of erosion, sedimentation and tectonic deformation
- record and interpret geological information from maps, reports, boreholes, well logs, sample repositories, air photos, satellite imagery, geochemical surveys and other sources
- conduct geological surveys and field studies
- participate in the study and mitigation of natural disasters such as earthquakes, volcanos and mud slides
- prepare geological maps, cross-sectional diagrams and reports from field work and laboratory research
- supervise the work of technologists and technicians.

During the various stages of their work, geologists use a wide variety of instruments including hammers, diamond drills, geopositioning devices, gravity meters, microscopes, spectroscopes and x-ray diffraction equipment. They work with computers, both in the field and in the office. They also need to be familiar with the fundamentals of science from chemistry, physics, biology and mathematics.

Geologists may work in a variety of areas:

- **Coal geologists** locate and characterize coal resources and determine their suitability for coal mining and coal bed methane (gas) development.
- **Computing geologists** develop software applications (for example, database systems, geographic information systems, statistics packages) and use them to analyze data and information.
- **Economic geologists** locate, evaluate and characterize mineral deposits.
- **Engineering geologists** analyze geological data to advise government agencies and construction companies on the suitability of locations for buildings, dams, highways, airfields and tunnels. They also work with other engineers in oil and gas and mineral exploration and production and in environmental clean-ups.
- **Environmental geologists** assess the environmental impact of the development or use of mineral, hydrocarbon (oil, gas, coal) and water resources, and assist in restoring disturbed land back to its original condition or to a more valuable land use (reclamation).
- **Geochemists** study the chemical makeup of minerals, rocks and fluids and their interactions to understand the distribution and migration of materials in the earth's crust.
- **Geochronologists** determine the ages of rocks by studying the radioactive decay of key elements.
- **Geomorphologists** examine landforms and processes that cause the earth's surface to change (for example, erosion and glaciation).

- **Hydrogeologists** study the properties, amount and composition of groundwater and formation waters. They may search for potable water or be involved in environmental issues such as groundwater contamination, landfill siting or liquid waste disposal by deep injection. For more information, see the Hydrologist occupational profile.
- **Marine geologists** study coastal and marine environments and their evolution, and investigate ocean basins for mineral and petroleum potential.
- **Mineralogists** analyze, identify and classify minerals and precious stones according to their composition and structure, study the properties of minerals and develop industrial and environmental uses.
- **Mining geologists** locate, analyze and study the Earth's mineral and rock resources with a view to their efficient and safe exploitation.
- **Paleontologists** study fossils for a variety of purposes (e.g. establishing relative age, petroleum exploration, the study of evolution and ancient environments).
- **Petroleum geologists** use information gathered from boreholes, geophysical and geochemical data, geological maps, rock samples and remote sensing imagery to decide where to drill for oil and gas, and help petroleum engineers to optimize the extraction process by determining the geological characteristics of an underground reservoir and the fluids in it.
- **Planetary geologists** study the nature and history of planets and satellites in the solar system.
- **Sedimentologists** study the processes that result in the formation of sedimentary rocks and apply this knowledge to help locate coal, petroleum and other types of mineral resources.
- **Stratigraphers** study arrangements of sedimentary rock layers by examining the fossil and compositional content of boreholes and diamond-drill cores to help locate coal and petroleum.
- **Structural geologists** study the geometry and elements of brittle and plastic rock deformation, including the evolution of mountain-building and Earth structures useful in resource extraction.
- **Surficial geologists** study sediments and rock layers close to the Earth's surface. Their findings are used in road and building construction, landfill siting, mineral exploration, environmental contamination, groundwater production and global change studies.
- **Volcanologists** study active and dormant volcanoes to predict eruptions and minimize potential damage and to learn about the physics and chemistry of volcanic processes.
- **Well site geologists** work closely with drilling crews in the field to help ensure that wells penetrate target zones and coring samples are taken at required intervals.

Working Conditions

Most geologists in Alberta work in the energy industries and spend much of their time working in office environments. However, field work is commonly required as part of educational and professional development activities. A few geologists spend three to six months each year doing field work, living and working in remote areas and covering large areas by foot, all-terrain vehicle, boat, helicopter or airplane. Mining geologists may work underground part of the time. Considerable travel is required for geolgists involved in international exploration.

Physical requirements for geologists vary greatly depending on the nature of the work. Geologists working in laboratories may do little or no significant lifting; those collecting samples in the field may be required to lift items weighing up to 25 kilograms. Collecting samples may also involve covering considerable distances on foot.

Personal Characteristics

Geologists need the following characteristics:

- good communication skills
- an open, inquiring, analytical mind
- an aptitude for mathematics and science
- excellent decision-making skills
- the ability to visualize three-dimensional objects from two-dimensional drawings
- the ability to work well in a team environment.

They should enjoy being outdoors working in the field, doing work that requires precision and developing innovative approaches and taking charge of situations.

Educational Requirements

The minimum education requirement for geologists is a **bachelor of science (B.Sc.) honours degree in geology**. Ongoing professional development is required to keep up to date.

- The **University of Alberta** in Edmonton offers a four year B.Sc. degree program in geology as well as honours and specialization programs in geology and paleontology, a Master of Science (M.Sc.) degree program and a doctoral (PhD) program. The admission requirement for the bachelor's degree programs is a high school diploma with an overall average of at least 70 per cent in English 30, Pure Math 30, Chemistry 30, Physics 30 and one other approved Grade 12 subject (Biology 30 is required for the paleontology program). The University of Alberta also offers a one year diploma program in exploration geology for people who already have a four year bachelor's degree in geology, geophysics or mineral engineering plus some industrial experience.
- The **University of Calgary** offers four year B.Sc. degree programs in geology and in applied and environmental geology as well as master's and doctoral degree programs in geology. The admission requirement for the bachelor's degree programs is a high school diploma with an overall average of at least 70 per cent in English 30, Pure Math 30, Chemistry 30, one of Biology 30, Physics 30 or Math 31, and one of Social Studies 30, a 30-level science, a 30-level language or a five credit Grade 12 subject (Math 31 and Physics 30 are recommended).

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Other Requirements

(section revised OCTOBER 2004)

Under Alberta's Engineering, Geological and Geophysical Professions Act, you must be a registered member of the Association of Professional Engineers, Geologists and Geophysicists of Alberta (APEGGA) to practice as a Professional Geologist or a Professional Geophysicist. You do **not** have to be registered if you work under the direct supervision of a Professional Geologist or a Professional Geophysicist and do not call yourself a Professional Geologist or Professional Geophysicist.

Employment and Advancement

(section revised JANUARY 2006)

Geologists are employed by:

- consulting firms
- resource, exploration, engineering and environmental companies
- government departments and agencies
- science centres and museums.

A B.Sc. degree is required for entry level positions. Advanced degrees are required for positions of greater responsibility including research and post-secondary teaching positions.

Geologists are part of the larger National Occupational Classification 2113: Geologists, Geochemists and Geophysicists. In Alberta, most people employed in this classification work in the following industries:

- **Oil and Gas Extraction**
- **Professional and Technical Services**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

About 4,350 Albertans are employed in the Geologists, Geochemists and Geophysicists occupational group which is expected to grow 1.5 to 2.5 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 60 to 110 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since geologists form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for geologists.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised SEPTEMBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Geologists, Geochemists and Geophysicists occupational group working part-time or full-time earned from **$37,900 to $159,600 a year.** The average salary was **$71,700 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Association of Professional Engineers, Geologists and Geophysicists of Alberta (APEGGA) website: www.apegga.org

Canadian Geoscience Council (CIC) Careers in Geoscience website: www.science.uwaterloo.ca/earth/geoscience/careers.html

Canadian Society of Petroleum Geologists (CSPG) website: www.cspg.org

What on Earth: a Canadian Newsletter for the Earth Sciences website: www.whatonearth.org

Related Occupational Profiles

Exploration Geophysicist
Gemmologist
Geological and Geophysical Technologist
Hydrologist
Oceanographer
Petroleum Engineer

Related High School Subjects

Energy and Mines; Information Processing; Language Arts; Mathematics; Physical Education; Science (Biology; Chemistry; and Physics); and Social Studies

Related Post-Secondary Fields of Study

Sciences

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Geomatics/Surveying Engineer

Produced JULY 2004

Geomatics/surveying engineers gather, model, analyze and manage spatially-referenced data (information identified according to location).

NOC Number(s): 2131
Minimum Education: 4 years post-secondary education/training
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: I O D

Duties

Geomatics engineers use terrestrial, marine, airborne and satellite sensors to gather data and develop information systems suitable for land use planning and landscape analysis. For example, they may acquire and integrate data for:

- spatial referencing networks for environmental monitoring
- deformation analysis
- legal boundary delineation
- precise engineering surveys, scientific studies and topographic mapping
- real-time and post-mission data acquisition in support of positioning and navigation
- the development and implementation of Geographic Information Systems and GIS software applications.

Geomatics engineers use measurement-related technologies such as:

- satellite-based positioning
- Inertial Navigation Systems (INS)
- aerial photography and laser profiling
- multispectral data collection and analysis
- industrial metrology
- computer hardware, software and firmware and related data acquisition system interfacing
- electronic distance, angle and height measurement and calibration
- digital cartography and GIS.

The data collected is made available either in the form of digital data repositories, conventional maps, GIS or attributed co-ordinate lists.

Geomatics engineers may specialize in areas such as the following:

Geodetic engineers are global surveyors involved in:

- establishing a global net of reference points by satellite and other extraterrestrial positioning methods
- determining the geoid (the basic reference surface for heights) from gravity and satellite altimetric measurements
- monitoring movement in the earth's crust and measuring variations in the shape and gravity field of the Earth
- establishing positions and water levels on the sea using satellite and radio positioning methods.

Land surveyors plan, direct and conduct legal surveys to determine and interpret the location of boundaries, contours and other natural or human-made features (for more information, see the Land Surveyor occupational profile).

Navigation and positioning engineers:

- use navigation systems (e.g. GPS, INS) for positioning, navigating, guiding and controlling air, land and sea vehicles
- design and write custom software to integrate various hardware systems
- develop user interfaces for navigation and guidance systems.

Photogrammetric and remote sensing engineers:

- use aerial photography and other digital remote sensing techniques to collect information about specific features of the earth

- direct the overall planning and development of mapping projects
- determine aerial photographic and remote sensing requirements and the type of acquisition and plotting equipment to be used
- determine the aerial photography and remote sensing techniques and computer software needed to meet the required standards of accuracy
- generate maps based on the information collected.

Geographic information systems engineers:

- organize different types of position-related information into consistent databases
- develop software and analysis tools for using this information in urban planning and management, resource exploration, environmental management and land use studies.

Working Conditions

Geomatics engineers may work in offices and laboratories, or in the field, often in remote areas. Field work for land surveyors is usually performed by survey technicians. Experienced engineers generally spend more time in an office environment. In the field, they may be required to lift equipment weighing up to 25 kilograms.

Personal Characteristics

Geomatics engineers need the following characteristics:

- mathematical ability
- the ability to analyze spatial problems and measurements
- good communication skills.

They should enjoy being innovative, doing work that requires precision, making decisions and supervising people, and having variety in their work.

Educational Requirements

Geomatics engineers must have and be able to integrate knowledge about:

- statistical analysis
- measurement processes
- cartography
- map projections
- information theory
- computer science.

The minimum education requirement is a **four year bachelor's degree with a specialization in geomatics engineering**.

In Alberta, the **University of Calgary** offers a four year Bachelor of Science (B.Sc.) degree program in geomatics engineering. The minimum admission requirement is a high school diploma with an average of at least 70 per cent in English 30, Pure Math 30, Math 31, Chemistry 30 and Physics 30.

There are student quotas for admission into the Faculty of Engineering so higher marks are often required to gain entry to these programs.

Post-secondary institutions throughout the province offer university transfer programs that allow students to apply up to two years of study toward university bachelor's degree programs. It is the student's responsibility to ensure that the courses they choose to take will be accepted for credit at the institution to which they wish to transfer.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Other Requirements

(section revised OCTOBER 2004)

Under Alberta's Engineering, Geological and Geophysical Professions Act, you must be a registered member of the Association of Professional Engineers, Geologists and Geophysicists of Alberta (APEGGA) to practice as a Professional Engineer. You do **not** have to be registered if you work under the direct supervision of a Professional Engineer and do not call yourself a Professional Engineer.

Employment and Advancement

(section revised JANUARY 2006)

Geomatics engineers work for:

- survey firms
- engineering and other high-tech companies
- building contractors
- petroleum and mining companies
- remote sensing companies
- geographic information companies and software developers
- computer graphics companies
- public utilities
- municipal, provincial and federal departments of transportation, surveying and mapping.

Experienced geomatics engineers may become supervisors or administrators. Opportunities for advancement are particularly good for experienced geomatics engineers who have a sound technical background coupled with managerial abilities.

Geomatics/surveying engineers are part of the larger National Occupational Classification 2131: Civil Engineers. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Professional and Technical Services**
- **Construction**
- **Oil and Gas Extraction**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 5,950 Albertans are employed in the Civil Engineers occupational group which is expected to grow 2.3 to 3.3 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 130 to 200 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since geomatics/surveying engineers form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for geomatics/surveying engineers.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised SEPTEMBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Civil Engineers occupational group working part-time or full-time earned from **$22,900 to $152,900 a year.** The average salary was **$77,400 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Association of Professional Engineers, Geologists and Geophysicists of Alberta (APEGGA) website: www.apegga.org

Geomatics Industry Association of Canada (GIAC) website: www.giac.ca

Related Occupational Profiles

Civil Engineer
Environmental Engineer
Geographer
Geomatics/Surveying Technologist
Land Surveyor

Related High School Subjects

Communication Technology; Information Processing; Language Arts; Mathematics; Physical Education; and Science (Chemistry; and Physics)

Related Post-Secondary Fields of Study

Engineering, Architecture and Related Studies

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Geomatics/Surveying Technologist

Produced JUNE 2004

Geomatics technologists conduct or participate in field surveys, office calculations and plan production to determine the exact locations and relative positions of natural features and man-made structures on the earth's surface, underground or underwater.

NOC Number(s): 2254.1
Minimum Education: 2 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **O I M**

Duties

In general, geomatics technologists:

- stake out buildings and other structures such as bridges, dams, tunnels, refineries and other engineering works
- perform calculations and field layouts of horizontal, vertical and spiral curves when conducting detailed surveys on projects such as highways, urban streets and railways
- conduct underground, open pit and tunnel surveys and produce plans from these surveys
- do hydrographic surveys of shoreline and off-shore, subsurface contours
- survey subdivisions, roads, rights-of-way, mineral claims and well sites
- conduct field surveys for new townships and sections of land to establish or re-establish legal survey boundaries
- research land titles, legal survey plans, aerial photographs, satellite imagery, geographical databases and other relevant information for planning surveys
- plan and conduct control surveys for mapping purposes
- create and process digital databases to compile geographic information in numerical and graphical formats
- use geographic information systems (GIS) and remote sensing for spatial analysis
- prepare proposed and as-built plans using electronic field data collection and computer graphic methods
- extract survey and thematic information from remotely sensed imagery
- use global positioning systems (GPS) to monitor earth orbiting satellites to determine geographic positions.

In the course of their work, geomatics technologists use a wide variety of surveying and computer equipment including electronic distance measuring instruments and global positioning systems, geographic information systems and digital mapping systems.

Working Conditions

Geomatics technologists work alone and in teams with land surveyors, engineers and other technologists. They work indoors, often using computers to compile and analyze data, and outdoors in all weather conditions conducting surveys.

Extensive travelling may be required, sometimes to remote areas. Some lifting up to 25 kilograms is required.

Personal Characteristics

Geomatics technologists need the following characteristics:

- an aptitude for mathematics
- the ability to think visually about geometric forms
- the ability to perceive pertinent detail in objects and drawings
- good communication skills
- the observation skills, physical fitness and endurance required for field work.

They should enjoy working outdoors with equipment and instruments at tasks requiring precision, analyzing information and finding innovative solutions to problems, taking a methodical approach to their work and supervising and co-ordinating the work of others.

Educational Requirements

The recommended educational background for geomatics engineering technologists is a **two year diploma in geomatics technology**. It is possible to learn on the job and take related courses part-time, but not common.

In Alberta, the following institutions offer two year diploma programs in Geomatics Engineering Technology.

- **Lethbridge Community College**. The entrance requirement is a high school diploma or equivalent with Math 30 or Pure Math 30 (or 65 per cent in Math 33 or Applied Math 30) and Physics 20, and a basic understanding of computer technology.
- The **Northern Alberta Institute of Technology (NAIT)** in Edmonton. The minimum admission requirement is a high school diploma or equivalent with English 30 or 33, Math 30 (or at least 60 per cent in Math 33) and one of: Science 30, Physics 30 or Chemistry 30. An interest in and aptitude for applied sciences, especially those with a physics base, are definite assets.
- The **Southern Alberta Institute of Technology (SAIT)** in Calgary. The admission requirement is a high school diploma or equivalent with English 30 or 33, Pure Math 30 or Math 30, and Science 30 or Physics 20.

Continuing education programs often are offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Other Requirements

(section revised OCTOBER 2004)

Certification with the Alberta Society of Engineering Technologists (ASET) is voluntary.

Under Alberta's Engineering, Geological and Geophysical Professions Act, Registered Professional Technologists - Engineering must be ASET members to engage in a defined scope of engineering practice as registered by the Association of Professional Engineers, Geologists and Geophysicists of Alberta (APEGGA).

Employment and Advancement

(section revised JANUARY 2006)

Geomatics technologists are employed by:

- engineering and legal survey firms
- aerial photographers
- mapping companies
- seismic services companies
- natural resource companies
- government departments
- utility companies
- construction companies
- survey instrument suppliers.

Geomatics technologists may advance to supervisory positions in which they are responsible for other technologists, or move into data processing, drafting or cartography positions. Additional education and training are required to become a Land Surveyor (for more information, see the Land Surveyor Occupational Profile).

Geomatics/surveying technologists are part of the larger National Occupational Classification 2254: Land Survey Technologists and Technicians. In Alberta, over 75 per cent of people employed in this classification work in the **Professional and Technical Services** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Professional and Technical Services industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 650 Albertans are employed in the Land Survey Technologists and Technicians occupational group which is expected to grow 2.0 to 3.0 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 10 to 20 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since geomatics/surveying technologists form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for geomatics/surveying technologists.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Land Survey Technologists and Technicians occupational group working part-time or full-time earned from **$21,500 to $101,900 a year.** The average salary was **$43,000 a year.**

For more detailed information, see ASET's Annual Salary Surveys.

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Society of Engineering Technologists (ASET) website: www.aset.ab.ca

Alberta Society of Surveying and Mapping Technologies (ASSMT) website: www.assmt.ab.ca

Geomatics Industry Association of Canada (GIAC) website: www.giac.ca

Related Occupational Profiles

Architectural Technologist
Civil Engineering Technologist
Engineering Design and Drafting Technologist
Geomatics/Surveying Engineer
Land Surveyor
Mapping Technologist

Related High School Subjects

Information Processing; Language Arts; Mathematics; Physical Education; and Science (Physics)

Related Post-Secondary Fields of Study

Engineering and Science Technologies

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Geriatric Medicine Specialist

Produced DECEMBER 2004

Geriatric medicine specialists are physicians who specialize in preventing, diagnosing and treating diseases and disorders in older people. They work with others in health care teams to restore ill and disabled older people to their optimal level of ability and, where possible, return them to independent life at home.

NOC Number(s): 3111.1
Minimum Education: 8 + years post-secondary education/training
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: I S D

Duties

Geriatric medicine specialists are experts in organizing and providing health care for older people. In general, they:

- apply their knowledge of aging, clinical problems of the elderly and special features of disease in the aged to make accurate diagnoses in frail seniors
- apply their knowledge of local health, social and voluntary services and resources to design individualized care plans for the elderly
- co-ordinate their assessments with nurses, social workers, rehabilitation therapists, pharmacists, psychologists and other health care professionals
- participate in case conferences designed to share information, co-ordinate activities and plan preferred management strategies for elderly patients
- promote the maintenance of health and disease prevention for all older patients
- recommend and mobilize support services to help patients maintain their independence in the community
- confer with health and community members to ensure that health and social services are in place and serving the elderly satisfactorily
- teach physicians at the undergraduate and post-graduate levels the principles of geriatric assessment and illness management
- design research projects to study normal aging and diseases in the elderly.

Working Conditions

Geriatric medicine specialists work primarily in hospitals and clinics. They often participate in on-call rosters.

Personal Characteristics

Geriatric medicine specialists need the following characteristics:

- the intellectual ability required to successfully complete the academic training and keep up to date with new developments in geriatric medicine
- a genuine interest in the welfare of elderly patients and the ability to work with them, their caregivers and other health care professionals
- high ethical standards
- emotional strength and maturity
- good communication and teaching skills.

They should enjoy managing complex issues, co-ordinating information, dealing with people and directing the work of others.

Educational Requirements

The education and training time required is **a total of at least ten years of post-secondary education and training**. After completing at least two years of university study followed by graduation from a medical doctor (MD) program (for more information, see the Physician profile), prospective geriatric medicine specialists enrol in a post-graduate medicine program. They enter on-the-job specialty training in internal medicine for three or four years, then two years of subspecialty training in geriatric medicine. After successfully completing the program and passing national examinations for internal medicine and geriatric medicine, graduates are authorized by the Royal College of Physicians and Surgeons to call themselves Specialists in Geriatric Medicine.

Graduates of MD programs who choose to go into family practice, but wish to concentrate on working with elderly patients, can take six months to one year of extra training and receive certification in the Care of the Elderly Program. This qualifies them to act as consultants in addition to providing primary care.

The **University of Alberta** in Edmonton and the **University of Calgary** offer training programs for geriatric medicine specialists and family physicians with a particular interest in geriatrics.

Graduates of MD programs who choose to go into psychiatry but wish to concentrate on working with older patients can take an 18 month training program in geriatric psychiatry. Those who qualify act as consultants in geriatric psychiatry to other physicians.

Other Requirements

Under Alberta's Medical Profession Act, you must be a registered member of the College of Physicians and Surgeons of Alberta (CPSA) to practice medicine in Alberta.

Employment and Advancement

In Alberta, geriatric medicine specialists are employed primarily by universities and regional health authorities. They work in acute care hospitals, geriatric rehabilitation institutions and continuing care facilities. Few set up their own private practices.

Geriatric medicine specialists are part of the larger National Occupational Classification 3111: Specialist Physicians. In Alberta, most people employed in this classification work in the **Health Care and Social Assistance** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Health Care and Social Assistance industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Geriatric medicine specialists make up a very small part of the Specialist Physicians occupational group (about 5 per cent). There is a current shortage of geriatric medicine specialists in Alberta and this shortage is forecasted to become more severe as members of the baby boom generation grow older.

Salary

Most specialists in private or group practice are paid by provincial health insurance programs according to the volume and type of services they provide. Their incomes vary widely.

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Medical Association (AMA) website: www.albertadoctors.org

Canadian Geriatrics Society (CGS) website: www.canadiangeriatrics.ca

College of Physicians and Surgeons of Alberta (CPSA) website: www.cpsa.ab.ca

Royal College of Physicians and Surgeons of Canada (RCPSC) website: rcpsc.medical.org

Related Occupational Profiles

Gerontological Specialist
Pathologist
Pediatrician
Physician
Psychiatrist

Related High School Subjects

Community Health; Language Arts; Mathematics; Science (Biology; Chemistry; and Physics); and Social Studies

Related Post-Secondary Fields of Study

Health Care and Medical Sciences

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Gerontological Specialist

Produced NOVEMBER 2004

Gerontological specialists are professionals who specialize in working with older adults.

NOC Number(s): 4169.9
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: I D M

Duties

Gerontology is the study of aging processes and individuals as they grow from middle age through later life. It includes the study of physical, mental and social changes in older people as they age and changes in society resulting from an aging population.

Gerontological specialists' duties and responsibilities vary considerably from one position to another. For example, they may:

- plan, administer and evaluate programs for older adults (e.g. administer senior citizens centres, provide home support services, supervise day support programs for frail or disabled seniors)
- provide health services for older adults in hospital, continuing care and community settings
- provide or co-ordinate professional services for older adults in agencies or government departments
- provide age-related counselling and information services (e.g. retirement planning, housing, tax assistance, home support or transportation services)
- provide business-related services (e.g. financial, real estate, leisure or vacation planning) for older adults
- advise businesses on issues related to older workers and consumers (e.g. marketing strategies, purchasing power, accessibility).

The title gerontologist is generally reserved for those who have advanced degrees (master's or doctoral degrees). In general, gerontologists:

- conduct research or teach at the post-secondary level
- develop and analyze policies on issues related to older adults
- provide consultative services related to gerontology.

For information about physicians who specialize in caring for older patients, see the Geriatric Medicine Specialist profile.

Working Conditions

Gerontological specialists work in a variety of settings ranging from office environments to institutional environments to private homes. Those who work in clinical settings or who serve older adults directly (e.g. provide health or counselling services) may be required to work shifts, work some evenings and weekends, or take clients on outings in the community.

Personal Characteristics

Gerontological specialists need the following characteristics:

- the ability to integrate knowledge from a variety of disciplines into an understanding of aging and older adults
- good listening and communication skills
- the ability to work effectively in team environments that often include volunteers.

They should enjoy working with older adults, organizing and interpreting information, and developing creative solutions to problems.

Educational Requirements

Gerontological specialists usually have **post-secondary education including coursework related to aging**. Age-related issues are studied in a wide variety of disciplines including biology, education, environmental studies, ethics, health, human ecology, law, psychology, public administration, recreation, religion and sociology. Therefore, gerontological specialists come from a wide variety of professional backgrounds (e.g. nursing, social work, dentistry, recreation, law enforcement).

Degree programs in the social and health sciences are offered by universities and colleges throughout Alberta. Admission requirements vary but generally include a high school diploma with English 30 and four other 30-level subjects. For information about specific types of programs, see related occupational profiles such as Psychologist, Registered Nurse, Rehabilitation Practitioner and Social Worker.

In Alberta, the following programs are directly related to gerontological studies:

- **Grant MacEwan College** in Edmonton offers a Gerontological Nursing certificate program by distance education. Applicants must be a registered nurse, registered psychiatric nurse or licensed practical nurse who have at least a C- in a three credit health assessment course.
- **Lethbridge Community College** offers a two year Therapeutic Recreation (Gerontology) diploma program. The entrance requirement is a high school diploma or equivalent. Biology 30 and at least 65 per cent in English 30 or 33 are recommended. Immunization and a medical examination are required.
- **Mount Royal College** in Calgary offers one year certificates in Gerontology: Studies in Aging and Gerontology: Business and Entrepreneurship by distance education. These programs are designed for those who have a post-secondary diploma or degree and wish to enhance their knowledge and skills in working with older adults (e.g. social workers, mental health workers, nurses, physical and occupational therapists, business professionals and recreational, social and educational program developers).
- The **University of Calgary** offers a Master of Social Work (MSW) program with a gerontological social work concentration. The entrance requirement is an average of at least 3.00/4 in a suitable four year bachelor's degree program.

The **Alberta Centre on Aging** at the University of Alberta posts on its website a list of aging-related courses offered by universities throughout the province. The Centre also posts information about seminars and conferences.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

Gerontological specialists work in public and private agencies such as:

- government departments
- universities and colleges
- hospitals and nursing homes
- housing agencies
- counselling centres
- agencies offering community programs (e.g. seniors centres, meals-on-wheels)
- businesses providing services to older adults.

Many gerontological specialists work for the same employers as other people in their first profession or discipline but they specialize in working with older adults. Their advancement opportunities are the same as for others in their field.

As members of the baby boom generation age, demand for gerontological specialists is expected to increase in Alberta.

Salary

(section revised OCTOBER 2005)

Gerontological specialists' salary ranges vary considerably depending on their responsibilities and qualifications (education and experience). Salary ranges for those who have professional qualifications are comparable to others in their profession. For information about salary levels in related occupations, see the appropriate occupational profiles (e.g. Psychologist, Registered Nurse, Rehabilitation Practitioner, Social Worker).

Other Sources of Information

(section revised JANUARY 2005)

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Centre on Aging, University of Alberta website: www.ualberta.ca/aging

Alberta Association on Gerontology (AAG) website: www.aagweb.ca

Association for Gerontology in Higher Education (AGHE) website: www.careersinaging.com

Canadian Association on Gerontology (CAG) website: www.cagacg.ca

Related Occupational Profiles

Community Health Nurse
Geriatric Medicine Specialist
Recreation Therapist
Social Worker

Related High School Subjects

Community Health; Language Arts; Mathematics; Science (Biology; and Chemistry); and Social Studies

Related Post-Secondary Fields of Study

Business, Management and Administrative Studies; Education and Library Studies; Health Care and Medical Sciences; Human Ecology, Fashion and Food Sciences; Physical Education and Recreation; Social Sciences, Law and Religious Studies; and Social, Community and Protective Services

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For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Glazier

Produced FEBRUARY 2006

Glaziers cut and install glass and aluminum systems for commercial, residential and automotive applications.

NOC Number(s): 7292
Minimum Education: Apprenticeship Trade - Grade 9
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: M O I

Duties

In Alberta, a journeyman in the Glazier trade may be certified as an:

- Glazier
- Auto Glass Technician.

Duties vary from one positon to another but, in general, **glaziers**:

- read and interpret drawings and specifications to determine the materials required, location of framing and procedures for installation
- measure openings for size and shape, mark and cut glass panes to fit, secure the panes in place, weatherproof joints, and assemble and install aluminum window parts
- install, fit, fabricate and attach architectural metals or related substitute products in commercial and residential buildings
- assemble parts of pre-fabricated glass units such as revolving doors, display cases, plate glass, shower doors, store fronts, automatic doors, skylights, sloped glazing, curtain walls, barrel vaults, solariums and other support structures
- install and maintain pre-fabricated glass, mirrors or glass products on walls, ceilings, fronts of buildings, handrails and walkways
- replace safety glass, windows, windshields, and glass in furniture and other products.

Auto glass technicians glaze, set, attach, install and remove glass for vehicles and off-road equipment. They also cut, prepare and fabricate flat glass for buildings and fixtures.

Working Conditions

Glaziers work in a variety of environments. Some work outdoors at construction sites, sometimes on scaffolds and swing-stages (platforms suspended from the top of highrise buildings). Others work in factories installing glass in wooden or metal frames or in shops replacing glass in vehicles or furniture. They generally work 40 hours a week, but may have to work overtime to meet deadlines. There is some risk of injury when working with sharp edges and broken glass.

Glaziers may be required to lift items weighing over 25 kilograms.

Personal Characteristics

Glaziers need the following characteristics:

- the skills to read, write and communicate verbally
- some mathematical ability
- physical strength and stamina
- the ability to work in high places
- good eyesight to measure, cut and see flaws in glass
- manual dexterity
- the ability to work independently or with a team.

They should enjoy variety and developing special skills.

Educational Requirements

To work in Alberta, glaziers must be ONE of the following:

- registered apprentices
- certified journeymen
- working for an employer who is satisfied that they have the skills and knowledge expected of certified journeymen
- self-employed.

To **register** with **Alberta Apprenticeship and Industry Training**, apprentices must:

- have at least an Alberta Grade 9 education (or equivalent) or pass an entrance exam
- find a suitable employer who is willing to hire and train an apprentice. Most employers prefer to hire high school graduates and may select apprentices from among their current employees. Computer skills are an asset.

The **term of apprenticeship** for:

- **glaziers** is four years (four 12-month periods) that include a minimum of 1,620 hours of on-the-job training and six weeks of technical training each year.
- **auto glass technicians** is two years (two 12-month periods) that include a minimum of 1,620 hours of on-the-job training and six weeks of technical training each year.

High school students can become apprentices and gain credits toward apprenticeship training and a high school diploma at the same time through the Registered Apprenticeship Program (RAP).

Applicants who have related training or work experience may be eligible for credit or certification.

Only **glazier** apprentices may attempt the Interprovincial Exam in the final period of their apprenticeship training and, if successful, are granted a Red Seal (which is recognized in most parts of Canada).

Technical training is arranged by Alberta Apprenticeship and Industry Training and is currently offered at at the Southern Alberta Institute of Technology (SAIT) in Calgary.

Pre-employment programs for prospective apprentices and continuing education programs for journeymen may be offered on an as needed basis by the institution(s) listed above or other schools.

Employment and Advancement

Glaziers are employed by glass and glazing companies and contractors.

Experienced glaziers may advance to supervisory positions such as foreman or contract manager, or set up their own shops doing work for private homes and small businesses. Alberta certified journeyman glaziers who have the the supervisory or management skills required by industry may apply for an Achievement in Business Competencies Blue Seal by contacting Alberta Apprenticeship and Industry Training.

In Alberta, over 75 per cent of people employed as glaziers work in the following industries:

- **Construction**
- **Retail Trade**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- time of year (for seasonal jobs)
- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 750 Albertans are employed in the Glaziers occupational group which is expected to grow 1.5 to 2.5 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 10 to 20 **new** positions will be created each year **in addition** to job openings created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Apprentice **glaziers** earn at least 55 per cent of the journeyman wage rate in their place of employment in the first year, 60 per cent in the second, 65 per cent in the third and 70 per cent in the fourth. According to the Alberta Provincial Apprenticeship Committee for this trade, journeyman wage rates vary, but generally range from **$17 to $28 an hour plus benefits** (2005 estimate).

Apprentice **glazier - auto glass technicians** earn at least 55 per cent of the journeyman wage rate in their place of employment in the first year and 65 per cent in the second. According to the Alberta Provincial Apprenticeship Committee for this trade, journeyman wage rates vary, but generally range from **$14 to $20 an hour plus benefits** (2003 estimate).

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Glaziers occupational group working part-time or full-time earned from **$16,700 to $54,400 a year.** The average salary was **$33,900 a year.**

Other Sources of Information

Alberta Apprenticeship and Industry Training website: www.tradesecrets.org

Alberta Construction Industry "Trade Up!" website: www.careersconstruction.com

Calgary Construction Association website: www.cca.cc

Construction Sector Council website: www.csc-ca.org

Related Occupational Profiles

Auto Body Technician
Carpenter
Floorcovering Installer
Insulator
Lather-Interior Systems Mechanic
Painter and Decorator
Roofer
Tilesetter

Related High School Subjects

Construction Technologies; Information Processing; Mathematics; and Physical Education

Related Post-Secondary Fields of Study

Trades, Industrial and Related Training

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Golf Professional

Produced MARCH 2005

Golf professionals teach and promote the game of golf and provide related services for golfers. Some golf professionals play tournament golf; others manage golf and recreation facilities.

NOC Number(s): 5254
Minimum Education: 3 years post-secondary education/training
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: M S i

Duties

Golf professionals are expert players who:

- teach and promote all aspects of the sport
- provide related services (e.g. golf club cleaning, storing and repair services, caddie services, club and cart rentals)
- organize club tournament operations
- assist in the administration and management of the club
- represent the club in professional or national golf activities such as golf tournaments, clinics and seminars
- direct and maintain a golf program including practice ranges and putting greens
- manage a Pro Shop, including supervising staff, and purchasing and merchandising items for sale.

Golf professionals who play in tournaments are called tournament professionals. They must be associated with the Canadian tour or another internationally recognized tour, and play a minimum number of Canadian tournaments per year.

Working Conditions

Golf professionals work indoors in golf shops and outdoors playing and teaching. They may be required to lift and carry equipment weighing up to 25 kilograms.

Golf professionals frequently work long hours during the summer months. The work can be seasonal, from early spring to late fall. However, to ensure year-round employment, some golf professionals have developed other golf-related activities (e.g. indoor teaching, making custom golf clubs, indoor driving ranges) or introduced winter sports to clubs (e.g. cross-country skiing, curling).

Tournament professionals can play year-round: in Canada during the warmer months and in the southern United States during the winter months. They must be willing to practice many hours a day.

Personal Characteristics

Golf professionals need the following characteristics:

- able to teach others
- organized
- willing to sometimes work long, irregular hours
- friendly and outgoing with a strong customer service orientation
- able to communicate and get along with all kinds of people.

They should enjoy taking a methodical approach to assembling and custom-fitting equipment, monitoring activities, teaching people and planning programs.

Educational Requirements

In addition to exceptional playing ability, golf professionals need strong business skills. Membership in the Canadian Professional Golfers' Association (CPGA) requires **three years of related post-secondary education.**

Post-secondary institutions throughout Alberta offer three and four year programs related to business management. The following offer programs directly related to golf management:

- **Grant MacEwan College** in Edmonton offers a two year Management Studies diploma program with specializations in golf operations management and professional golf management. The entrance requirement is a high school diploma with English 30 (or at least 75 per cent in English 33, or equivalent), Pure Math 30 or Math 31 (or at least 65 per cent in Applied Math 30, or equivalent) and Physics 30. A resume and proof of playing ability are also required. Golf industry experience or customer service, retail sales or hospitality industry experience are assets. The College also offers a one year Professional Golf Management post-diploma certificate program.
- **Lethbridge Community College** offers a two year Professional Golf Management diploma program. The entrance requirement is a high school diploma with English 30 or 33, and Pure or Applied Math 30, or equivalent. Male applicants must have a Royal Canadian Golfers Association (RCGA) certified handicap of six or under and submit a signed RCGA handicap card. Female applicants require a certified handicap of 14 or under. The College also offers a one year Professional Golf Management post-diploma certificate program.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Other Requirements

Golf professionals working at facilities in Canada must:

- be members of the CPGA
- give up their amateur status
- pass a qualifying school held annually.

If applicants fail to successfully better the standard set by the CPGA, they must wait for a period of at least one to two years before they may re-apply for amateur standing.

Employment and Advancement

(section revised JANUARY 2006)

Golf professionals are employed by golf clubs, courses, driving ranges and shops. After completing the apprenticeship, it may take an individual up to ten years to secure a position as a head golf professional.

Once employed, golf professionals may advance from assistant professional to associate professional to head professional to master professional. They may move into general manager positions overseeing clubhouse operations and possibly golf course maintenance, or they may open their own driving ranges or speciality shops.

Golf professionals are part of the much larger National Occupational Classification 5254: Program Leaders and Instructors in Recreation and Sport. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Information, Culture and Recreation**
- **Educational Services**
- **Public Administration**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 7,400 Albertans are employed in the Program Leaders and Instructors in Recreation and Sport occupational group which is expected to grow 2.5 to 3.5 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 180 to 260 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since golf professionals form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for golf professionals.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Aspiring golf professionals must be willing to work for relatively little compensation during their first years of employment. Salaries for apprentices and assistants range from **$1,500 a** month in their first year to **$2,500 a** month in their final year. They are employed primarily during golf season (April to October), although many clubs employ golf professionals year round. Many earn additional income (**$5,000 to $10,000 a** year) by winning tournaments or providing instruction **(2004 estimates).**

Salaries for certified golf professionals vary depending on the size of the facility. Golf professionals are usually paid a retaining fee but also receive income from the operation of the Pro Shop and equipment rentals, fees from lessons and a percentage of green fees or event membership.

Initial incomes for inexperienced head golf professionals in Alberta range from **$35,000 to $50,000 per year**. Experienced head golf professionals earn **$60,000 to $80,000 per year.** Golf professionals who manage exclusive clubs may earn **up to $120,000 per year (2004 estimates).**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Professional Golfers' Association (APGA) website: www.albertapga.com

Canadian Professional Golfers' Association (CPGA) website: www.cpga.com

Related Occupational Profiles

Fitness Instructor
Professional Athlete
Sports Instructor

Related High School Subjects

Language Arts; Management and Marketing; Mathematics; Physical Education; and Tourism Studies

Related Post-Secondary Fields of Study

Business, Management and Administrative Studies

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Grain and Forage Crop Producer

Produced FEBRUARY 2005

Grain and forage crop producers are farmers who grow grains such as wheat, barley, canola, oats, rye, flax seed, peas and speciality crops or forage crops.

NOC Number(s): 8251
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus below average occupational growth in Alberta
Interests: **D M O**

Duties

Grain and forage crop producers may specialize in different types of operations. Their duties vary depending on the type of crop and the size and purpose of the operation but, in general, they:

- determine the amount and kinds of crops to be grown
- carry out or oversee the cultivation, planting, fertilizing, spraying and harvesting of crops
- load harvested crops for transport to markets
- recruit and supervise permanent or short-term staff
- market crops
- purchase farm machinery, seed and other supplies
- maintain machinery, equipment and buildings
- develop and maintain financial and production records.

Producers may grow traditional crops such as wheat, oats, barley or oilseeds (e.g. canola), pedigreed seed or specialty crops. Specialty crops are small acreage crops such as spices, specialty oats and barley, hemp, confectionary seeds, bird seed, medicinal crops or processing crops such as corn, peas, beans or carrots.

In addition to the duties listed above, specialty crop production may require:

- operating and managing specialized machines (e.g. planters, harvesters)
- highly skilled marketing
- crop-specific quality control practices.

Commercial forage crop producers plant legumes or grasses to sell as winter feed for livestock. Some specialize in one type of forage (e.g. alfalfa) which they may sell to processing plants to be dehydrated and compressed into pellets or cubes.

Working Conditions

Grain farming is a highly mechanized operation. Grain farmers must be willing to spend long and sometimes tedious days operating machinery during seeding and harvesting seasons. They also must be prepared to work in hot, dusty conditions some of the time although air-conditioned machine cabs have changed this for many.

The work is done mostly during the growing seasons, leaving more time in the winter to prepare for the next year and attend continuing education programs. However, many grain farmers supplement their operation with livestock production or forage production. Pedigreed seed-grain and forage seed growers must clean their grain and are often busy throughout the year.

Grain and forage crop producers routinely lift loads weighing up to 25 kilograms.

Personal Characteristics

Grain and forage crop producers need the following characteristics:

- excellent health with no allergies to grains or forage dust
- strength and endurance

- good organizational skills
- patience, a positive attitude and a high level of personal commitment
- good business skills
- a high degree of self-discipline
- the mechanical aptitude required to operate and service equipment.

They should enjoy taking responsibility for their operations, taking a methodical approach to their work, and driving and operating machinery and equipment.

Educational Requirements

Grain and forage crop production is a specialized, high-investment business. Producers need a good working knowledge of:

- soil and crop management
- plant nutrition
- disease and pest control
- business and financial management
- environmental issues and compliance requirements
- the market place
- machinery operation and maintenance.

Individuals may acquire the required knowledge and experience by working on farms or taking related education programs. Project management and negotiation skills are a definite asset.

The **Alberta Green Certificate Farm Training Program** through **Alberta Agriculture, Food and Rural Development** is an apprenticeship-type program that combines practical on-farm experience and training with formal education in the form of home study courses, workshops, short courses or college agricultural courses. The Green Certificate program offers three levels of training:

1. crop farm technician may require a year to complete.
2. field crop production supervisor requires two or more years to complete.
3. farm business manager requires three or more years of training.

Applicants must be at least 15 years of age and have a supportive farm trainer and job site. Trainees who are also high school students can receive high school diploma credits in an approved optional curriculum for achieving a Green Certificate.

In Alberta, the following post-secondary institutions offer related education programs:

- **Lakeland College** in Vermilion offers a two year Crop Technology diploma program. The entrance requirement is a high school diploma or equivalent with English Language Arts 30-1 or English 30 (or at least 65 per cent in ELA 30-2 or English 33) and Pure or Applied Math 20 (or Math 20 or 23), and one of the following: Biology 20, Chemistry 20, Physics 20 or Science 20. Lakeland College also offers an Agribusiness diploma program.
- **Lethbridge Community College** offers a two year Agricultural Technology diploma program with a specialization in plant and soil science. The entrance requirement is a high school diploma or equivalent (Math 33, Biology 30 and Chemistry 30 are recommended).
- **Olds College** offers a two year Crop and Agri-food Technology diploma program. The entrance requirement is a high school diploma or equivalent with Math 20 or 23 (or Pure Math 20 or Applied Math 20), Biology 20 and Chemistry 20 or Science 30. Olds College also offers Agricultural Production and Management, and Agricultural Business diploma programs, and a Bachelor of Applied Science degree program.
- The **University of Alberta** Faculty of Agriculture, Forestry and Home Economics in Edmonton offers four year Bachelor of Science (B.Sc.) degree programs in Agriculture, and Agricultural/Food Business Management. The entrance requirement for the Agriculture program is a high school diploma with at least 70 per cent in English 30, Math 30 or Pure Math 30, Biology 30, Chemistry 30 and one other approved 30-level subject. The entrance requirement for the Agricultural/Food Business Management program is completion of the first year of the Agriculture program with a GPA of at least 2.7/4.
- The **University of Lethbridge** offers four year degree programs in Agricultural Studies. The entrance requirement for the Bachelor of Arts degree program in Agricultural Studies is an average of at least 68 per cent in English 30, Math 30 or Pure Math 30 (or Applied Math 30), two other 30-level subjects plus a fifth Grade 12 subject (Biology 30 recommended). Admission to the Bachelor of Science degree program in Agricultural Studies requires Biology 30, Chemistry 30, and Math 30 or Pure Math 30 (Math 31 is recommended). The University of Lethbridge also offers post-diploma degrees in Agricultural Studies for graduates of approved agricultural diploma programs.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Continuing education programs are often offered on an as needed basis.

Other Requirements

Specialized crop producers may be required to register with an industry organization such as the Canadian Seed Growers Association.

Employment and Advancement

(section revised JANUARY 2006)

Some grain and forage crop producers own or rent land; others are employed as farm managers. The high costs of land and equipment make starting a grain operation difficult. Many young farmers take over family farms, or are part of a family co-operative operation or family corporation.

Most grain and forage crop producers do not rely solely on one type of crop for income. For example, forage crops may be rotated with grain production, or hay and grain may be produced for livestock consumption.

For those seeking work on large farms as labourers, technicians, supervisors or managers, local Human Resources Canada offices are helpful in bringing together farmer-employers and potential employees.

Grain and forage crop producers are part of the larger National Occupational Classification 8251: Farmers and Farm Managers. In Alberta, over 75 per cent of people employed in this classification work in the **Agriculture** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Agriculture industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 35,950 Albertans are employed in the Farmers and Farm Managers occupational group which is expected to grow up to 0.5 per cent each year from 2005 to 2010 in Alberta. (**Note**: Since grain and forage crop producers form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for grain and forage crop producers.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Annual incomes for grain and forage crop producers **vary greatly** depending on the type of operation, current market prices, weather conditions and operating expenses. The timing of seeding and harvesting can mean the difference between profit and loss.

Managers' salaries often vary according to business size.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Farmers and Farm Managers occupational group working part-time or full-time earned from **$16,200 to $83,200 a year.** The average salary was **$39,000 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Canola Producers Commission (ACPC) website: www.canola.ab.ca

Canadian Seed Growers' Association website: www.seedgrowers.ca

Related Occupational Profiles

Dairy Producer
Farm Worker/Technician
Livestock/Poultry Producer
Market Gardener
Seed Cleaning/Conditioning Plant Manager

Related High School Subjects

Agriculture; Enterprise and Innovation; Financial Management; Language Arts; Logistics; Management and Marketing; Mathematics; Mechanics; Physical Education; and Science (Biology; and Chemistry)

Related Post-Secondary Fields of Study

Agriculture and Related Technologies

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Graphic Designer

Produced MAY 2005

Graphic designers translate verbal and abstract concepts into meaningful visual communication.

NOC Number(s): 5241.1
Minimum Education: 2 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **I M S**

Duties

Graphic designers focus primarily on print media such as brochures, packaging, promotional materials and annual reports. For information about designers who work primarily in electronic media, see the Interactive Media Developer and Web Designer occupational profiles.

Graphic designers are problem-solvers who research and manage visual design projects. In general, they:

- consult with clients and other professionals to establish a project's goals and objectives, target market, budget and schedule
- analyze needs/problems and develop visual solutions
- prepare concept presentations for client approval, ranging from simple sketches to full colour layouts
- develop approved concepts in consultation with clients
- prepare artwork or digital files for production
- direct photographers, illustrators and other creative professionals involved in the project
- co-ordinate the production of print, electronic or audio-visual media.

Graphic designer may produce design products such as:

- trademarks, corporate logos and brand logos
- stationary and corporate identity materials
- annual reports and investor relations materials
- packaging and image design for consumer products
- advertisements
- promotional posters
- sign and wayfinding systems
- film and video graphics
- diagrams, maps and graphs
- publication design for books and magazines
- flyers, brochures and promotional literature.

On smaller projects, the design process may take days or weeks; larger, more complex projects can take months to complete. Most design studios have the capacity to produce everything from the initial concept to finished artwork for reproduction. Some designers concentrate on a particular aspect of the design process (e.g. design concept, layout production) or on a particular type of product (e.g. corporate identity, marketing communications, packaging design).

Working Conditions

Self-employed graphic designers divide their time between studio work and meeting with clients, photographers and other professionals involved in the design process. Some travel may be required.

Designers employed by advertising companies or design studios spend most their time in the studio, occasionally attending meetings with clients. Account executives may work as liaisons between clients and designers.

It is not uncommon for graphic designers to work long hours to meet project deadlines.

Personal Characteristics

Graphic designers need the following characteristics:

- the ability to work effectively in a team environment
- the ability to interpret client needs and develop creative graphic solutions
- drawing ability
- strong writing and oral presentation skills
- good listening and analytical skills
- the ability to pay close attention to details
- good negotiating and marketing skills
- the ability to learn from constructive criticism
- good organizational skills
- the ability to deal with the pressure of constant deadlines
- a willingness to keep up to date with new developments in the graphic design field.

They should enjoy synthesizing information and finding innovative ways to present ideas, taking a methodical approach to tasks requiring precision (e.g. preparing specifications, estimating costs) and consulting with people.

Educational Requirements

Most graphic designers have post-secondary education in visual communications or graphic design. Developing a strong portfolio of work is essential for finding employment as a graphic designer. Computer skills are a definite asset. The Society of Graphic Designers of Canada recommends a three or four year program in visual communications or graphic arts.

In Alberta, the following post-secondary institutions offer programs related to graphic design:

- **Alberta College of Art and Design** in Calgary
- **DevStudios** in Edmonton
- **Grande Prairie Regional College**
- **Grant MacEwan College** in Edmonton
- **HCC Choice College** in Spruce Grove
- **Keyano College** in Fort McMurray
- **Lethbridge Community College**
- **Medicine Hat College**
- **Mount Royal College** in Calgary
- **Network Learning Masters** in Edmonton
- **Northern Alberta Institute of Technology (NAIT)** in Edmonton
- **Red Deer College**
- **Southern Alberta Institute of Technology (SAIT)** in Calgary
- **Sprott-Shaw Community College** in Calgary
- **University of Alberta** in Edmonton
- **University of Lethbridge**.

Entrance requirements vary considerably. Admission to diploma and degree programs is competitive and generally requires a high school diploma with a minimum average (ranging from 60 to 80 per cent) in English Language Arts 30-1 and four other Grade 12 courses (e.g. Pure Math 30, Social Studies 30, a 30-level language other than English, Math 31, Biology 30, Chemistry 30, Physics 30, Science 30, a Grade 12 fine arts subject) or equivalent. Applicants also must submit a portfolio. For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

(section revised JANUARY 2006)

Graphic designers may work for:

- corporate and government communications or public relations departments
- graphic design studios
- film and television studios
- advertising agencies

- multimedia companies
- hospitals and other institutions
- industrial designers
- book publishing firms
- architectural firms (signage)
- printers
- newspapers and magazines.

Graphic designers are part of the larger National Occupational Classification 5241: Graphic Designers and Illustrators. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Professional and Technical Services**
- **Information, Culture and Recreation**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

About 6,950 Albertans are employed in the Graphic Designers and Illustrators occupational group which is expected to grow 1.6 to 2.6 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 110 to 180 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since graphic designers form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for graphic designers.)

Salary

(section revised OCTOBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Graphic Designers and Illustrators occupational group working part-time or full-time earned from **$15,800 to $92,600 a year.** The average salary was **$37,200 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Society of Graphic Designers of Canada website: www.gdc.net

Related Occupational Profiles

Animator
Cartoonist
Illustrator
Industrial Designer
Interactive Media Developer
Pre-Press Technician
Web Designer

Related High School Subjects

Communication Technology; Design Studies; Enterprise and Innovation; Fine Arts (Visual Arts); Information Processing; Language Arts; Management and Marketing; Mathematics; and Social Studies

Related Post-Secondary Fields of Study

Communications; and Fine Arts and Performing Arts

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Greenhouse Operator

Produced DECEMBER 2003

Greenhouse operators plan, organize and direct the activities of greenhouse staff who propagate, grow and market flowers and other plants or produce.

NOC Number(s): 8254
Minimum Education: 2 years post-secondary education/training
Employment Outlook: Employment turnover plus below average occupational growth in Alberta
Interests: **D M S**

Duties

Greenhouse operators run wholesale and retail horticultural firms ranging in size from small family businesses to operations employing over fifty people. They may deal with all kinds of plants and produce, or specialize in a particular type. Their duties and responsibilities therefore vary but, in general, greenhouse operators:

- determine the type and quantity of plants to grow or stock (e.g. cut or potted flowers, bedding plants, vegetables, plant varieties)
- determine the environmental conditions required to grow the selected plants and set planting and care schedules accordingly
- design, install, maintain and program environmental control and irrigation systems
- supervise staff in planting, transplanting, pruning, feeding and spraying plants
- identify and control problems caused by insects, rodents, plant diseases or nutritional deficiencies
- operate and maintain carbon dioxide generators, ultraviolet sterilizers, water treatment machines and related equipment
- develop marketing plans
- provide information about plant selection and care for customers
- order equipment and supplies
- hire, train and supervise staff
- prepare and adhere to budgets and maintain records
- keep up to date regarding new technologies and techniques (e.g. biological crop protection, recirculation systems, new plant varieties)
- ensure compliance with applicable provincial and federal regulations regarding food safety and the handling, use, storage and disposal of pesticides.

In smaller operations, greenhouse operators may also do some of the hands-on work in greenhouses:

- prepare soil for planting, plant bulbs, seeds and cuttings, graft plants, transplant seedlings and rooted cuttings, and train and prune plants
- remove weeds, spray plants with pesticides and apply fertilizers
- position and regulate greenhouse irrigation systems to water plants
- set up irrigation systems in soil-less growing media
- maintain boilers, furnaces and fans
- construct greenhouses and benches.

Working Conditions

Greenhouse operators usually work indoors in greenhouses and offices, although they may also work outdoors in shade houses. They often work long, irregular hours, particularly in the spring and summer months. Those who work in greenhouses that operate on a year-round basis may experience different busy periods. The work can be hectic at times and satisfying customer needs can be stressful.

Personal Characteristics

Greenhouse operators need the following characteristics:

- creative problem solving skills
- decision-making skills
- manual dexterity
- no severe allergies to plants, pollen, pesticides or other chemicals
- patience
- an eye for detail.

Those in retail operations must also be able to deal courteously and effectively with the public.

Greenhouse operators should enjoy directing the work of others, organizing greenhouse operations and providing information to customers.

Educational Requirements

(section revised JULY 2004)

In the past, many greenhouse operators worked their way up to supervisory positions by learning on the job and taking related courses. However, graduates of post-secondary education programs in horticulture generally have a better chance of advancing to supervisory and management positions than those who do not have related post-secondary education.

In Alberta, the following institutions offer horticulture-related programs:

- the **Northern Alberta Institute of Technology** in Fairview offers a one year Horticulture Technician certificate program with a specialization in horticultural management. The program includes 16 weeks of work experience. The entrance requirement is a high school diploma with Grade 11 English, science and math.
- **Medicine Hat College** offers a one year Horticultural Technician certificate program with a specialization in production or ornamentals. The program includes two practicums and 120 hours of work experience. The entrance requirement is a high school diploma or equivalent with at least 55 per cent in Grade 12 English and Grade 11 math (pure or applied), biology and chemistry.
- **Olds College** offers:
    - a two year Horticulture diploma program with a specialization in greenhouse management. The entrance requirement is a high school diploma or equivalent with at least 55 per cent in Grade 12 English, Chemistry 20, Biology 20, and Pure or Applied Math 20 (or equivalent).
    - a post-diploma Bachelor of Applied Horticulture degree program with a specialization in production horticulture. The entrance requirement is a diploma or degree in a closely-related area and at least four months of experience in the horticulture industry.
    - related distance education programs.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Short courses and workshops in horticulture are also offered by the **Alberta Greenhouse Growers Association** and **Alberta Agriculture, Food and Rural Development** at Crops Diversification Centres in the north (Edmonton) and south (Brooks).

Other Requirements

Depending on the type of operation, greenhouse operators who work with pesticides may require a Greenhouse Alberta Pesticide Applicator Certificate from the Pesticide Management Program at Lakeland College. Those who sell pesticides must hold a Pesticide Applicator Certificate, Commercial Pesticide Dispenser Certificate or a Lawn and Garden Pesticide Dispenser Certificate (or employ at least one staff member who has the appropriate certificate).

The Canadian Nursery Landscape Association has a national certification program for retail garden centre and nursery production employees. Members who wish to be certified must have at least 2,000 hours of industry experience (up to 1,000 hours credit given for related education), and pass a written examination and practical skills tests.

Employment and Advancement

(section revised JANUARY 2006)

Greenhouse operators may be self-employed or employed as greenhouse or garden centre managers. Most work in the wholesale or retail industry; some work for government departments or research centres.

Greenhouse operators generally start in junior positions and work their way up (or start their own businesses). Greenhouse positions may be full-time, part-time or seasonal. Advancement depends on performance and the availability of supervisory positions. Opportunities for advancement beyond the greenhouse operator level are limited.

Greenhouse operators are part of the larger National Occupational Classification 8254: Nursery and Greenhouse Operators and Managers. In Alberta, most people employed in this classification work in the **Agriculture** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Agriculture industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 300 Albertans are employed in the Nursery and Greenhouse Operators and Managers occupational group, which is expected to 0.5 to 1.5 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover. (**Note**: Since greenhouse operators form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for greenhouse operators.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Earnings for greenhouse operators vary considerably, particularly for those who are self-employed.

According to the **2005 Alberta Wage and Salary Survey**, Albertans working part-time or full-time in the Nursery and Greenhouse Operators and Managers occupational group earned **up to $66,000 a year**. Those with three years of experience earned from **$21,100 to $52,800 a year.** The average salary was **$29,200 a year**.

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Environment Pesticide Management Program website: www.gov.ab.ca/env/protenf/pesticide/index.html

Alberta Greenhouse Growers Association website: www.agga.ca

Canadian Nursery Landscape Association website: www.canadanursery.com

Landscape Alberta Nursery Trades Association website: www.landscape-alberta.com

Related Occupational Profiles

Landscape Architectural Technologist
Landscape Gardener
Market Gardener
Nursery Operator
Pest Control Operator

Related High School Subjects

Agriculture; Construction Technologies; Enterprise and Innovation; Financial Management; Language Arts; Logistics; Management and Marketing; Mathematics; and Science (Biology; and Chemistry)

Related Post-Secondary Fields of Study

Agriculture and Related Technologies

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Guest Services Attendant

Produced MARCH 2003

Guest services attendants provide personal services for hotel guests.

NOC Number(s): 6672.1
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **O S M**

Duties

Duties and responsibilities vary from one position to another but, in general, guest services attendants:

- greet and escort guests to their rooms
- transport luggage by hand or on a cart
- ensure that guests are comfortably settled in their rooms, including checking room ventilation, heating, lighting and supplies such as towels and linen, and explaining how the night lock, television and telephone systems work.

Depending on the establishment, they may also:

- promote hotel services and facilities
- answer questions about local entertainment, dining and recreational facilities
- transport luggage for large tour groups
- deliver messages and mail
- run errands within the hotel or very nearby
- maintain a clean lobby/entrance area
- act as part of the security team
- act as a doorperson or hotel greeter
- park guests' vehicles
- operate the hotel courtesy shuttle service.

Working Conditions

Guest services attendants work shifts, including weekends and holidays. In the winter months, they may spend a considerable amount of time outside helping guests with their luggage. Lifting up to 25 kilograms is required.

During peak travel seasons, the work can be hectic but also more financially rewarding. Guest services attendants may be required to wear tailored uniforms.

Personal Characteristics

Guest services attendants need the following characteristics:

- pleasant, outgoing personality
- conservatively groomed and neat
- tactful and courteous,
- good English speaking skills
- good physical condition.

They should enjoy handling luggage, helping guests, and having clear rules and guidelines for their work.

Educational Requirements

(section revised OCTOBER 2005)

There are **no specific educational requirements** to become a guest services attendant, but a high school education improves an attendant's chances for advancement. Establishments that offer valet or shuttle services require job applicants to have a valid class four or five Alberta operator's license and a clean driving record. Knowledge of directions to local attractions is a definite asset. Training is on the job.

Alberta Tourism Education Council (ATEC) has developed a process for guest services attendants to demonstrate their skills and write an examination to earn a certificate that is recognized across Canada in the tourism and hospitality industry.

Employment and Advancement

(section revised JANUARY 2006)

Guest services attendants are employed in hotels. In resort areas, employment may be seasonal.

Guest services attendant positions are often filled by other hotel employees or by guest service attendants who have experience in other establishments. Employers are generally careful to check previous work records and character references to ensure that applicants are honest and have personal integrity.

Experienced guest services attendants can move into other hotel positions such as front desk clerk or concierge (manager of guest services).

Guest services attendants are part of the larger National Occupational Classification 6672: Other Attendants in Accommodation and Travel. In Alberta, over 75 per cent of people employed in this classification work in the **Accommodation and Food Services** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- time of year (for seasonal jobs)
- trends and **events** affecting overall employment (especially in the Accommodation and Food Services industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 350 Albertans are employed in the Other Attendants in Accommodation and Travel occupational group which is expected to grow 1.5 to 2.5 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover. (**Note**: Since guest services attendants form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for guest services attendants.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Guest services attendants' earnings vary depending on the location, size and type of hotel in which they are employed. In general, guest services attendants are paid **at or just above the minimum wage rate.** Tips may provide a significant amount of additional income.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Other Attendants in Accommodation and Travel occupational group working part-time or full-time earned from **$11,000 to $27,500 a year.** The average salary was **$24,300 a year.**

Other Sources of Information

(section revised OCTOBER 2005)

Alberta Hotel and Lodging Association website: www.albertahotels.ab.ca

Alberta Tourism Education Council (ATEC) website: www.atec.ca

Related Occupational Profiles

Hotel and Motel Desk Clerk
Room/Housekeeping Attendant

Related High School Subjects

Physical Education; and Tourism Studies

Related Post-Secondary Fields of Study

Personal and Food Services

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Hairstylist

Produced FEBRUARY 2006

Hairstylists cut and style hair to suit the client's face and lifestyle.

NOC Number(s): 6271.1
Minimum Education: Apprenticeship Trade - Grade 10
Employment Outlook: Employment turnover plus below average occupational growth in Alberta
Interests: **I O S**

Duties

Duties vary from one position to another but, in general, hairstylists:

- shampoo, cut, trim, colour, wave and style hair, wigs and hairpieces
- shave, trim and shape beards and moustaches
- suggest appropriate styling aids or hairstyles
- analyze hair and scalp and suggest treatment.

Hairstylists must keep their station clean and organized. Scissors, combs and brushes and clippers must be sterlized and kept in good working condition. Those who own or manage a salon:

- order supplies, pay bills and keep records
- hire and supervise employees
- encourage staff to learn new skills.

Working Conditions

Hairstylists work indoors in a clean environment. They must stand all day and sometimes work through their breaks. They may be required to work weekends and evenings and put in extra hours at peak times.

Personal Characteristics

Hairstylists need the following characteristics:

- good customer service skills
- physical stamina
- the ability to keep up to date with new hair fashions, supplies and changing technology
- professional appearance.

Educational Requirements

To work in Alberta, hairstylists must be registered apprentices or certified journeymen.

To **register** with **Alberta Apprenticeship and Industry Training**, apprentices must:

- have at least an Alberta Grade 10 education (or equivalent) or pass an entrance exam
- find a suitable employer who is willing to hire and train an apprentice.

The **term of apprenticeship** is two years (two 12-month periods) that include a minimum of 1,400 hours of on-the-job training and ten weeks of technical training each year. High school students can become apprentices and gain credits toward apprenticeship training and a high school diploma at the same time through the Registered Apprenticeship Program (RAP).

Applicants who have related training or work experience may be eligible for credit or certification.

Hairstylist apprentices may attempt the Interprovincial Exam in the final period of their apprenticeship training and, if successful, are granted a Red Seal (which is recognized in most parts of Canada).

Technical training is arranged by Alberta Apprenticeship and Industry Training and is currently offered at:

- Marvel College in Edmonton
- Delmar College of Hair Design Ltd. in Calgary.

Outside the apprenticeship program, the following post-secondary institutions offer related training:

- **Academy of Professional Hair Design,** a private vocational school in Red Deer, offers a 40-week Beauty Culture program. The entrance requirement is a high school diploma or equivalent.
- **Artists Within,** a private vocational school in Calgary, offers a full-time (eight weeks) and a part-time (16 weeks) Hair Design program. Applicants must be 19 years of age or have a high school diploma or equivalent.
- **Delmar College of Hair Design**, a private vocational school in Calgary, offers a 36-week Hairstylist program. The entrance requirement is a high school diploma or equivalent.
- **Est-Elle Academy of Hair Design,** a private vocational school in Edmonton, offers a 39-week Beauty Culture program.
- **G.P. Hair Academy,** a private vocational school in Grande Prairie, offers a 40-week Hairstyling program. The entrance requirement is at least 33 credits with Grade 10 English, Math and Science or equivalent.
- **HCC Choice College**, a private vocational school in Spruce Grove, offers a 48-week Hair Design and Cosmetology program.
- **L.A. School of Hair Design,** a private vocational school in Lethbridge, offers a 37-week Beauty Culture program. The entrance requirement is at least 33 credits with Grade 10 English and Math or equivalent.
- **Marvel College**, a private vocational school in Calgary, Edmonton and Red Deer offers a 37-week Hairstyling program. The entrance requirement is a high school diploma or equivalent.
- **Master's School of Hair Design**, a private vocational school in Medicine Hat, offers a 39-week Beauty Culture program. The entrance requirement is Grade 10 or equivalent. Applicants must also be at least 16 years of age.
- **Northern Lights Academy of Cosmetology,** a private vocational school in Grande Prairie, offers a 40-week Hairstylist program. The entrance requirement is Grade 10 or equivalent, a résumé, two letters of reference and a personal letter. Applicants must also be at least 17 years of age.

Pre-employment programs for prospective apprentices and continuing education programs for journeymen may be offered on an as needed basis by the institution(s) listed above or other schools.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

Most hairstylists work in beauty salons. Employment opportunities are concentrated in large- and medium-sized urban areas although many smaller communities support small salons. Part-time work is more common than in most other occupations.

Hairstylists can move into other areas such as colour or permanent wave technician demonstrating new techniques at hair shows or in salons to staff, estheticians or nail technicians. A hairstylists may also become a salesperson for a beauty supply house.

Advancement is usually limited to managing a salon or owning and operating one's own establishment. Alberta certified journeyman hairstylists who have the supervisory or management skills required by industry may apply for an Achievement in Business Competencies Blue Seal by contacting Alberta Apprenticeship and Industry Training.

Hairstylists are part of the larger National Occupational Classification 6271: Hairstylists and Barbers. In Alberta, most people employed in this classification work in the **Repair, Maintenance, Personal and Other Services** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Repair, Maintenance, Personal and Other Services industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 10,850 Albertans are employed in the Hairstylists and Barbers occupational group which is expected to grow 0.7 to 1.7 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 70 to 190 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since hairstylists form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for hairstylists.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Apprentice hairstylists earn at least minimum wage. Usually the pay increases as the training progresses. According to the Alberta Provincial Apprenticeship Committee for this trade, journeyman wage rates vary, but generally range from **$10 to $17 an hour plus benefits** (2005 estimate).

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Hairstylists and Barbers occupational group working part-time or full-time earned from **$11,100 to $82,400 a year.** The average salary was **$26,800 a year.**

Other Sources of Information

Alberta Apprenticeship and Industry Training website: www.tradesecrets.org

Post-secondary institution calendars or websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Related Occupational Profiles

Career and Technology Studies Teacher
Electrologist
Esthetician
Make-Up Artist
Nail Technician

Related High School Subjects

Cosmetology Studies; Financial Management; Language Arts; and Physical Education

Related Post-Secondary Fields of Study

Personal and Food Services; and Trades, Industrial and Related Training

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For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Hazardous Waste Management Technologist

Produced SEPTEMBER 2005

Hazardous waste management technologists provide information and advice on the packaging, handling and disposal of toxic wastes; conduct inspections and waste audits; investigate environmental incidents; and monitor and control the clean-up of contaminated land, water and air.

NOC Number(s): 2263
Minimum Education: 2 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **M I D**

Duties

Hazardous waste management involves preventing and reducing the use of hazardous materials, reducing or eliminating the production of hazardous waste, reusing materials and disposing of hazardous waste safely.

Duties and responsibilities vary from one position to another but, in general, hazardous waste management technologists:

- survey commercial and municipal organizations to investigate waste systems and disposal methods
- collect representative samples of waste material to determine characteristics and classify wastes
- provide information and advice on ways to collect, transport, handle, store and dispose of toxic wastes
- help clean up toxic waste spills and measure the extent of damage to the land, air or water
- help monitor and control the clean-up of contaminated land, water and air
- conduct inspections and waste audits of all types of industries to ensure that wastes are properly managed (stored, handled, recycled)
- write inspection and technical reports and gather evidence for use in legal actions
- advise industry and government, and assist in drafting rules and regulations for managing hazardous wastes
- inform industry and the public about hazardous waste management practices.

Hazardous waste management technologists often work in co-operation with environmental engineers to develop new methods of dealing with hazardous waste.

Working Conditions

Working conditions vary. Technologists may work in office environments or around dirty, noisy industrial sites. Depending on the circumstances, they may be required to wear personal protective equipment, work outdoors in all kinds of weather, travel frequently (sometimes internationally) or lift equipment weighing up to or over 25 kilograms.

Personal Characteristics

Hazardous waste management technologists need the following characteristics:

- dedication to personal and public safety
- alert and able to quickly recognize unsafe conditions
- patient, organized and orderly
- comfortable working with mechanical devices and instruments
- able to understand and keep up to date regarding regulations, guidelines and environmental legislation
- able to keep accurate records and write reports
- able to work with other members of a team.

They should enjoy taking a methodical approach to their work, analyzing data and finding innovative solutions to problems, and directing the work of others.

Educational Requirements

Hazardous waste management technologists must be:

- able to operate sampling instruments
- skilled at using computers to manipulate and analyze data
- able to understand and interpret laboratory results
- familiar with the operation of waste management and treatment facilities (landfills, hazardous waste storage sites, processing sites) and equipment.

Some employers require applicants to have a clean driving record.

Technologists may acquire the required skills and knowledge through a variety of education routes combined with on-the-job training. For example, they may take a related two year diploma program (such as environmental science or natural resource managment) or a related three or four year degree program (such as a Bachelor of Science degree biology, chemistry or environmental sciences). For information about related diploma and degree programs, see the Biological Technician, Environmental Auditor and Environmental Engineer occupational profiles.

Other Requirements

Certification is voluntary.

The Alberta Society of Engineering Technologists (ASET) offers certification for graduates of recognized education programs who have two years of successful experience in industry.

Employment and Advancement

(section revised JANUARY 2006)

Hazardous waste technologists are employed by the following types of organizations:

- municipal water and wastewater treatment facilities
- regional solid waste management facilities
- public works departments
- municipal engineering firms
- waste management companies, brokers and recyclers
- government environmental regulatory services
- pulp and paper processing companies
- oil and gas exploration companies and contractors
- petrochemical companies
- environmental contracting and consulting firms.

Technologists employed in larger organizations may advance to supervisory positions. Obtaining a bachelor's or master's degree in science or environmental engineering is usually required to move into more responsible management, consulting or professional roles such as hazardous materials engineer, recycling management or environmental auditing.

Hazardous waste management technologists are part of the larger National Occupational Classification 2263: Inspectors in Public and Environmental Health and Occupational Health and Safety. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Public Administration**
- **Oil and Gas Extraction**
- **Professional and Technical Services**
- **Health Care and Social Assistance**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 2,100 Albertans are employed in the Inspectors in Public and Environmental Health and Occupational Health and Safety occupational group which is expected to grow 1.0 to 2.0 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 20 to 50 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since hazardous waste management technologists form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for hazardous waste management technologists.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Inspectors in Public and Environmental Health and Occupational Health and Safety occupational group working part-time or full-time earned from **$18,300 to $172,300 a year.** The average salary was **$62,500 a year.** Salaries for hazardous waste management technologists are generally lower than the upper end of this range suggests.

Other Sources of Information

Alberta Society of Engineering Technologists website: www.aset.ab.ca

Association of Professional Engineers, Geologists and Geophysicists of Alberta website: www.apegga.org

Canadian Council for Human Resources in the Environment Industry website: www.cchrei.ca

Canadian Environmental Certification Approvals Board website: www.cecab.org

Environmental Services Association of Alberta website: www.esaa.org

Related Occupational Profiles

Biochemist
Biological Technician
Biologist
Chemist
Environmental Auditor
Environmental Engineer
Hydrometric Technician/Technologist
Occupational Health and Safety Inspector
Pollution Control Technologist
Public Health Inspector
Water and Wastewater Treatment Plant Operator

Related High School Subjects

Energy and Mines; Forestry; Information Processing; Language Arts; Logistics; Mathematics; Physical Education; Science (Biology; and Chemistry); and Wildlife

Related Post-Secondary Fields of Study

Engineering and Science Technologies; Environment, Forestry and Related Studies; and Sciences

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For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Health Information Management Professional

Produced OCTOBER 2004

Health information management professionals manage the collection, recording and transmission of health information. They translate information from paper documents to electronic records or integrate information into databases, interpret data, and ensure security and access to health information guidelines are followed.

NOC Number(s): 1413.3
Minimum Education: 2 years post-secondary education/training
Employment Outlook: Employment turnover plus below average occupational growth in Alberta
Interests: **M i d**

Duties

Health information management professionals safeguard the integrity and confidentiality of the information in health records. These records contain information about patients' medical histories and courses of treatment. For example, they may include physicians' notes, forms for prescribed medications, input from other members of the treatment team and/or test results.

Health information management professionals also turn the information in health records into data that can be used for statistics, research, planning and education. Health statistics are used to inform a wide variety of complex decisions (e.g. how to improve patient care, how to allocate resources).

Safeguarding records and producing health data involves the following processes:

- using an international classification system to convert a patient's diagnostic and procedural information to a standardized numerical format in a computer database
- collecting additional information about patients and their hospital stays to generate data about the patient population
- using computer applications to compile, sort, group, retrieve, analyze and present health data in a meaningful, relevant and timely way
- developing health information databases
- releasing patient information under the provisions of Alberta's Health Information Act
- ensuring that every patient's record is complete, filed and kept secure, but still readily accessible.

In smaller, rural communities, health information management professionals may also do medical transcription (for more information, see the Medical Transcriptionist occupational profile).

Working Conditions

Health information management professionals generally work a standard work week. Where health record departments are open longer hours, they may be required to work shifts.

A significant part of a typical day is spent working at a computer. Because mistakes could have a negative effect on patient care or hospital funding, there is considerable pressure to be accurate as well as fast.

Personal Characteristics

Health information management professionals tend to prefer work responsibilities that require a high degree of accuracy, responsibility and attention to detail. They should enjoy taking a methodical approach to compiling and classifying information, operating information retrieval systems and responding to requests for information.

Educational Requirements

Health information management professionals need computer and information management skills, and knowledge of anatomy, physiology and pathology. They may acquire the necessary skills and knowledge by taking a full-time program at a post-secondary institution or a distance education program.

In Alberta, the **Southern Alberta Institute of Technology (SAIT)** in Calgary offers a two year Health Information Management diploma program. The admission requirement is a high school diploma with 60 per cent in English 30 or 33 and Biology 30, and 50 per cent in Pure or Applied Math 30 or Math 31, or equivalent.

The **Canadian Healthcare Association** offers a two year Health Information Services program. Applicants must be employed in a health organization, have Grade 12 or equivalent education, and be proficient with computers. This program includes practical experience sessions and field placements.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Other Requirements

Membership in the Canadian Health Information Management Association (CHIMA) requires successful completion of a recognized two year post-secondary program and a national certification exam. Membership in the Alberta Health Record Association (AHRA) and CHIMA is voluntary.

Employment and Advancement

(section revised JANUARY 2006)

Health information management professionals are employed in traditional settings such as hospitals, clinics and community care facilities, and non-traditional settings such as the Workers Compensation Board or the Canadian Institute for Health Information. Those interested in travel may find employment outside Canada with the World Health Organization or through foreign recruitment agencies.

Health information management professionals are part of the larger National Occupational Classification 1413: Records Management and Filing Clerks. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Health Care and Social Assistance**
- **Public Administration**
- **Professional and Technical Services**
- **Finance, Insurance and Real Estate**
- **Information, Culture and Recreation**
- **Management, Administrative and Other Support Services**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 1,800 Albertans are employed in the Records Management and Filing Clerks occupational group which is expected to grow 0.3 to 1.3 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover. (**Note**: Since health information management professionals form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for health information management professionals.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next 10 to 15 years.

Salary

(section revised SEPTEMBER 2005)

Wages for health information management professionals who are members of the Health Sciences Association of Alberta range from **$20 to $32 an hour (2004).** For information about current collective agreements in the public and not-for-profit sectors, see the HSAA website.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Health Records Technicians occupational group working part-time or full-time earned from **$10,600 to $33,400 a year.** The average salary was **$18,500 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Health Record Association (AHRA) website: www.ahra.ca

Canadian Health Information Management Association (CHIMA) website: www.chima-cchra.ca

Health Sciences Association of Alberta (HSAA) website: www.hsaa.ca

Related Occupational Profiles

Administrative Assistant
Library Technician
Medical Secretary
Medical Transcriptionist
Receptionist
Unit Clerk
Word Processing Operator

Related High School Subjects

Community Health; Information Processing; Language Arts; Mathematics; and Science (Biology)

Related Post-Secondary Fields of Study

Clerical and Administrative Support; and Health Care and Medical Sciences

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For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Health Service Administrator

Produced FEBRUARY 2005

Health service administrators plan, organize, direct, co-ordinate and evaluate health programs and services that promote health and provide care to individuals, groups and communities.

NOC Number(s): 0311
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **D M I**

Duties

Health service administrators may have executive responsibilities for an entire organization or be responsible for managing a specific department or program. In general, however, they:

- develop plans, policies and processes for health programs and services
- design appropriate organizational structures
- select and supervise staff
- advise the governing body on policy and operational matters, and assist in developing organizational mission statements
- ensure that laws, regulations and policies are followed
- develop and maintain effective working relationships with representatives from other organizations, including governments, professional associations, the media and other stakeholders in the health care system
- implement operational plans and manage budgets
- provide the leadership required for the organization to fulfil its goals and objectives.

Working Conditions

Although health service administrators work in an office environment, they do not always work standard office hours. Their hours of work often extend beyond an eight hour day to attend meetings or to complete major tasks.

This work can be stressful because health service administrators are responsible for the effectiveness of their organizations and, ultimately, the quality of the programs and services provided.

Personal Characteristics

Health service administrators need the following characteristics:

- excellent interpersonal and organizational skills
- good verbal and written communication skills including public speaking skills
- the ability to work effectively with others
- leadership and team-building skills.

They should enjoy co-ordinating information and directing the work of others, negotiating with members of governing boards and senior managers, and developing and implementing plans.

Educational Requirements

Educational requirements for health service administrators vary depending on the position and the size and nature of the health service organization concerned. There are no standard education requirements. However, employers generally hire applicants who have related post-secondary education or certification.

This occupation requires **a combination of education and experience**. Health service administrators who come to the field from medicine, pharmacy, nursing or accounting backgrounds can supplement their training and experience through extension or other educational programs in health service management. Those who have graduate degrees in health management usually start in junior administrative positions to gain on-the-job experience.

- **Athabasca University** offers
  - a three year Bachelor of Health Administration degree program. Applicants must be at least 16 years of age. A high school diploma is not required.
  - a two year University Certificate in Health Development Administration program. Applicants must be at least 16 years of age. A high school diploma is not required.
  - a Post-Diploma Bachelor of Health Administration program. Applicants must have an approved two or three year diploma from an accredited college or technical institute.
  - a Master of Health Studies program with specializations in leadership and nursing practice. Applicants must have a Bachelor's degree in nursing and at least two years of professional nursing experience, nursing registration, Basic Life Support (BLS) certification and immunization status.
- The **Canadian College of Health Service Executives (CCHSE)** offers an online Certified Health Executive (CHE) program. Students have up to three years to successfully complete two self-directed learning assignments, Maintenance of Certification credits and the CHE examination. Applicants must be members of the College, have at least two years of experience in health services management and supply three letters of reference. A Master's degree with a health care focus is strongly recommended. CCHSE honours outstanding members with its highest designation, the College's Fellowship.
- The **Canadian Healthcare Association (CHA)** Learning Department offers a two year distance education program leading to a Health Services Management certificate. Applicants must hold a management position in a health organization. CHA also offers other management programs for: those new to management roles, senior managers in long-term care organizations, and those in quality and risk management. CHA Learning has an agreement with Athabasca University regarding credits for some CHA Learning programs.
- The **University of Calgary** offers four and five year Bachelor of Health Sciences Honours degree programs in Health and Society. Entrance requirements include English 30, Pure Math 30 (with a minimum grade of 70 per cent), Biology 30, Chemistry 30 and one of Math 31, Physics 30, Social Studies 30, Science 30, a 30-level language other than English or one 5-credit Grade 12 subject. Enrollment is limited.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

(section revised JANUARY 2006)

Health service administrators are employed by:

- public health organizations
- specialty hospitals and acute care hospitals
- continuing care facilities
- mental health facilities
- rehabilitation agencies
- health planning agencies and government departments
- health associations
- regional health authorities
- government departments.

They generally start in junior positions and advance to positions in senior management or larger organizations.

Health service administrators are part of the larger National Occupational Classification 0311: Managers in Health Care. In Alberta, most people employed in this classification work in the **Health Care and Social Assistance** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Health Care and Social Assistance industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 3,050 Albertans are employed in the Managers in Health Care occupational group which is expected to grow 2.0 to 3.0 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 60 to 100 **new** positions will be created each year **in addition** to job openings created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised SEPTEMBER 2005)

Salaries for health service administrators vary greatly depending on the size and nature of the health service organization, and the administrator's qualifications and experience.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Managers in Health Care occupational group working part-time or full-time earned from **$22,700 to $92,500 a year.** The average salary was **$50,000 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Canadian College of Health Service Executives (CCHSE) website: www.cchse.org

Canadian Healthcare Association (CHA) website: www.canadian-healthcare.org

Related Occupational Profiles

Accommodation Manager
Management Consultant
Municipal Administrator
School Business Official

Related High School Subjects

Community Health; Enterprise and Innovation; Financial Management; Information Processing; Language Arts; Legal Studies; Management and Marketing; Mathematics; Science (Biology; and Chemistry); and Social Studies

Related Post-Secondary Fields of Study

Business, Management and Administrative Studies; and Health Care and Medical Sciences

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For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Hearing Aid Practitioner

Produced SEPTEMBER 2003

Hearing aid practitioners evaluate clients' hearing acuity, sensitivity and communication, and select, fit, service and repair hearing instruments.

NOC Number(s): 3235.1
Minimum Education: 2 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **M S O**

Duties

Hearing instruments are electronic devices that amplify sound for people who have impaired hearing. Different types of hearing instruments use different methods to amplify sound.

Duties and responsibilities vary from one position to another but, in general, hearing aid practitioners:

- discuss hearing problems with clients and help them adjust to hearing loss
- use test instruments and standard evaluation procedures to test clients' hearing (e.g. speech reception, speech discrimination) and determine heari ıg thresholds
- identify and evaluate hearing problems
- explain their findings to clients, provide information about funding sources and help clients select appropriate hearing instruments or devices
- take ear impressions for use in the manufacture of hearing aids
- fit and adjust hearing aids
- provide advice on the use of hearing instruments
- do follow-up examinations and adjust devices as necessary
- program, service and make minor repairs on hearing aids and related equipment
- provide advice regarding available medical and rehabilitation facilities
- advise other health professionals and interested people when requested.

Working Conditions

Most hearing aid practitioners work in office, retail or health care environments. Hours of work vary and may include evening and weekend work to accommodate client needs. Some travel may be required.

Working with clients who have unrealistic expectations can be stressful.

Personal Characteristics

Hearing aid practitioners need the following characteristics:

- good communication skills
- good hand-eye co-ordination
- patience
- self-discipline
- an interest in biology and technology
- good interpersonal skills and the ability to relate to clients of all ages (most clients are senior citizens)
- the ability to work well in a team environment.

They should enjoy compiling, recording and analyzing test results, working with clients and operating equipment used to test hearing, take ear impressions and fit hearing aids.

Educational Requirements

Hearing aid practitioners may learn on the job under the supervision of a qualified practitioner and take a related education program at the same time, or take the education program and then look for work. Either way, they should be comfortable using computers.

Grant MacEwan College in Edmonton offers a two-year Hearing Aid Practitioner diploma program by distance delivery. The entrance requirement is a high school diploma with English 30 and Math 10, or equivalent. A professional profile is also required.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Other Requirements

(section revised OCTOBER 2004)

Under Alberta's Health Professions Act and Hearing Aid Practitioners Profession Regulation, registration with the College of Hearing Aid Practitioners of Alberta (CHAPA) is mandatory if you meet identified competency requirements and provide professional services directly to the public, teach the practice of the profession to members or students of the profession, or supervise registered members who provide services to the public. Registered members who are authorized by the College may perform restricted activities specified in the Regulation. Only registered members may call themselves Hearing Aid Practitioners.

Employment and Advancement

(section revised JANUARY 2006)

Hearing aid practitioners are employed in clinics, educational institutions, hospitals, rehabilitation centres and the private practices of audiologists. Many are self-employed. Most work in midsize or large cities. Those certified by the **National Board for Certification in Hearing Instrument Sciences** may work internationally.

Experienced hearing aid practitioners may start their own businesses or move into related occupations such as technical sales representative.

Hearing aid practitioners are part of the larger National Occupational Classification 3235: Other Technical Occupations in Therapy and Assessment. In Alberta, most people employed in this classification work in the **Health Care and Social Assistance** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Health Care and Social Assistance industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 1,900 Albertans are employed in the Other Technical Occupations in Therapy and Assessment occupational group which is expected to grow 1.8 to 2.8 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 30 to 60 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since hearing aid practitioners form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for hearing aid practitioners.)

Employment turnover and demand for hearing aid services are expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Some hearing aid practitioners work on a commission basis. Others are paid an hourly wage or annual salary. A few are self-employed.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Other Technical Occupations in Therapy and Assessment occupational group working part-time or full-time earned from **$11,900 to $85,100 a year.** The average salary was **$30,600 a year.**

Other Sources of Information

Post-secondary institution calendar and website (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Canadian Hearing Instrument Practitioners Society website: www.hearcanada.com

College of Hearing Aid Practitioners of Alberta website: www.chapa.ca

National Board for Certification in Hearing Instrument Sciences website: www.hearingnbc.org

Related Occupational Profiles

Audiologist
Ophthalmic Assistant
Optical Technician
Optician
Speech-Language Pathologist Assistant

Related High School Subjects

Community Health; Electro-Technologies; Language Arts; Mathematics; and Science (Biology; and Physics)

Related Post-Secondary Fields of Study

Personal and Food Services

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Heavy Equipment Operator

Produced DECEMBER 2003

Heavy equipment operators use a variety of mobile machines and attachments to excavate, grade and landscape earth or move workers, materials and equipment.

NOC Number(s): 7421
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: **O M i**

Duties

Heavy equipment operators control equipment by moving levers or foot pedals, operating switches and/or turning dials. Their job titles generally reflect the types of machines they operate (e.g. bulldozer operator, grader operator). However, one operator may operate several types of equipment.

Bulldozer operators, also called cat operators or cat skinners, operate crawler-tractors equipped with:

- large blades across the front for moving obstacles
- rippers for tearing up terrain
- work platforms for other workers to work from.

They clear and level land on construction, mining and forestry sites, and push other equipment to provide traction and assistance when needed.

Back-hoe operators use a variety of attachments to dig trenches, load heavy materials, vibrate and break rock or concrete, back-fill excavations and scoop and dump materials. There are two types of back hoes: rubber-tired and track (often called excavators).

Front-end loader operators operate mobile machines with buckets on the front for picking up heavy loads of earth, rock, sand, gravel or snow and dumping it into piles, excavations or trucks.

Grader operators spread and level earth, sand, gravel and rock, and plow snow in the winter by controlling the height and angle of grader blades. To level surfaces to a specified grade, they make successive passes over the working area, watching reference stakes, level gauges and/or the hand signals of other workers.

Paver operators operate asphalt paving machines that lay down asphalt for roads, driveways and parking lots with the aid of stakes and level gauges.

Power shovel operators manipulate a boom or crane that supports a dipper handle with a large dipper. The dipper is used to scoop up dirt, rock and coal, and drop it into trucks or piles.

Scraper operators scrape, load and haul earth on mining or construction sites. They level work sites, haul soil for roads and right-of-ways and haul coal and ore at mining sites.

Other heavy duty equipment operators manipulate the controls of machines unique to particular industries (e.g. tree harvesters and skidders in forestry and trench excavators in pipeline construction). The work of still other heavy equipment operators is described in the occupational profiles Crane and Hoisting Equipment Operator and Surface Mining Equipment Operator.

Working Conditions

Heavy equipment operators work outdoors in almost any kind of weather, although they may work in air-conditioned and dust-controlled cabs. For most, work is seasonal. Considerable overtime may be required in the warmer months and layoffs can be expected in the winter months. At oil sands mining sites, shift work is often required. Employment may be on a project-by-project basis and operators may have to travel and be away from home frequently.

The working environment is often noisy, dusty and dirty and, occasionally, equipment operators may be required to work in dangerous locations. Operators of excavating and grading equipment sit for long periods of time on vibrating or bouncing machinery. To avoid accidental injury, operators must be very safety conscious and follow the signals of ground crew members.

Heavy equipment operators may be required to routinely lift items weighing up to 10 kilograms.

Personal Characteristics

Heavy equipment operators need the following characteristics:

- excellent physical condition
- good vision and awareness of depth
- good eye and hand/foot co-ordination and fast reflexes
- mechanical ability
- the ability to work well in a team
- good communication skills in English.

They should enjoy operating machinery, taking a methodical approach to their work and trouble-shooting problems.

Educational Requirements

(section revised MAY 2004)

Heavy equipment operators are **generally trained on the job or take related training programs**. They need to know how to:

- operate heavy equipment safely
- perform preventive maintenance tasks
- diagnose mechanical problems
- read grade plans and use grade stakes in measuring the amount of earth to be moved
- follow directions that are spoken or given by hand signals.

Some operators start as labourers or truck drivers and move to heavier equipment as they develop skills under the supervision of experienced operators. The length of the required on-the-job training varies with the type of machine and with the individual's ability.

On-the-job training may be supplemented by a few weeks of training sponsored by industry-related organizations such as equipment manufacturers or unions.

Some operators start by completing a formal training program. The following Alberta post-secondary institutions offer related programs:

- **Kevano College** in Fort McMurray offers an eight-week Heavy Construction Equipment Operator certificate program which specializes in the operation of crawler tractors, motor scrapers, compactors and skid steers. Applicants for this program must be at least 18 years of age, have Grade 10, have a valid Class 5 driver's licence, complete an employer survey questionnaire, submit a resume and references, and participate in a personal interview.
- **Northern Lakes College** in Grouard offers a 40-week Petroleum Employment Training Certificate of Completion program. Applicants must have high school credits in core courses or equivalent and a Class 5 driver's license.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

(section revised JANUARY 2006)

Heavy equipment operators are employed in the petroleum, mining, forestry and construction industries. They may work for:

- general contractors building highways, dams and airports, or installing sewer and other utilities
- asphalt paving companies
- pipeline companies
- logging companies

- mining companies.

Experienced operators may move into related positions such as safety officer or trainer, or advance to supervisory positions.

Heavy equipment operators are part of the larger National Occupational Classification 7421: Heavy Equipment Operators (Except Crane) occupational group. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Construction**
- **Oil and Gas Extraction**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- time of year (for seasonal jobs)
- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

About 12,550 Albertans are employed in the Heavy Equipment Operators (Except Crane) occupational group which is expected to grow 2.2 to 3.2 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 270 to 400 **new** positions will be created each year **in addition** to job openings created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Wages for heavy equipment operators vary considerably depending on the type of equipment, the employer and the working conditions (e.g. isolated locations).

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Heavy Equipment Operators (Except Crane) occupational group working part-time or full-time earned from **$21,200 to $154,000 a year.** The average salary was **$60,000 a year.**

Other Sources of Information

Post-secondary institution calendar and website (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Construction Industry "Trade Up!" website: www.careersconstruction.com

Alberta Roadbuilders and Heavy Construction Association website: www.arhca.ab.ca

Calgary Construction Association website: www.cca.cc

Construction Sector Council website: www.csc-ca.org

Related Occupational Profiles

Crane and Hoisting Equipment Operator
Logging/Forestry Equipment Operators
Surface Mining Equipment Operator
Underground Miner
Well Service Equipment Operator

Related High School Subjects

Energy and Mines; Forestry; Language Arts; Mechanics; Physical Education; and Physics

Related Post-Secondary Fields of Study

Driver Training; and Trades, Industrial and Related Training

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Heavy Equipment Technician

Apprenticeship and Industry Training

Produced FEBRUARY 2006

Heavy equipment technicians maintain, repair and overhaul towed and self-propelled heavy vehicles and industrial heavy equipment and commercial transport devices connected to or moved by a power unit.

NOC Number(s): 7312, 7321.3
Minimum Education: Apprenticeship Trade
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **O M I; O I M**

Duties

Duties vary from one position to another but, in general, heavy equipment technicians:

- interpret work orders and technical manuals
- keep equipment cleaned, lubricated and maintained
- diagnose faults or malfunctions
- adjust equipment and repair or replace defective parts, components or systems
- test repaired equipment for proper performance to ensure that the work done meets manufacturers' specifications and legislated regulations
- write service reports.

In Alberta, people in this occupation may be certified as a:

- transport trailer mechanic
- truck and transport mechanic
- heavy duty equipment mechanic (off-road)
- heavy equipment technician.

Transport trailer mechanics maintain and repair transport devices such as flat decks, dry freight vans, refrigerated vans, tankers, converters, boosters, pole trailers, jeeps, steering dollys and dump trailers, and any other commercial pull type devices.

Truck and transport mechanics maintain and repair vehicles and equipment such as:

- stationary and mobile internal combustion engines and components
- on-highway vehicles (trucks and buses)
- towed on-highway and off-highway vehicles (trailers).

Heavy duty equipment mechanics (off-road) maintain and repair vehicles and equipment such as:

- stationary and mobile internal combustion engines and components
- tracked equipment (crawler tractors)
- ground-engaging equipment and components such as rippers, ditchers, backhoes and trenchers and similar equipment
- towed earth-moving equipment (scrapers)
- self-propelled earth-moving equipment (motor scrapers)
- off-highway motor vehicles (trucks)
- towed off-highway vehicles (trailers).

Heavy equipment technicians maintain and repair vehicles and equipment such as:

- stationary and mobile internal combustion engines and components
- tracked equipment (crawler tractors)
- ground engaging equipment and components, including rippers, ditchers, backhoes, trenchers and similar equipment
- towed earth moving equipment (scrapers)
- self-propelled earth moving equipment (motor scrapers)

- rubber tired equipment (tractors)
- on-highway and off-highway motor vehicles (trucks)
- towed on-highway and off-highway vehicles (trailers).

Working Conditions

The working environment for heavy equipment technicians varies considerably from one job to another. Some heavy equipment technicians work in modern laboratories overhauling fuel injection pumps and delivery systems. Others work at construction or industrial sites, sometimes outdoors in all types of weather conditions. Travel requirements and hours of work also vary. There is some risk of injury when working with heavy equipment and power tools. However, proper safety standards are maintained at all times.

Technicians may be required to lift items weighing over 25 kilograms.

Personal Characteristics

Heavy equipment technicians need the following characteristics:

- good vision, hearing and sense of smell to diagnose problems
- physical strength and stamina
- the ability to work in cramped and awkward positions
- the ability to work independently or as part of a team
- mechanical ability and an interest in all types of machinery and engines, electronics and precision equipment
- the ability to think logically
- the ability to keep up to date with changes in technology.

They should enjoy doing precision work, problem-solving and working with their hands.

Educational Requirements

To work in Alberta, heavy equipment technicians must be registered apprentices or certified journeymen.

To **register** with **Alberta Apprenticeship and Industry Training**, apprentices must:

- have at least an Alberta high school transcript with Math 20 or 23, Applied Math 20 or Pure Math 20, English 20 or 23 and Science 20, Physics 20, Biology 20 or Chemistry 20 (or equivalent) or pass an entrance exam
- find a suitable employer who is willing to hire and train an apprentice. Most employers prefer to hire high school graduates or technical school graduates and may select apprentices from among their current employees.

The **term of apprenticeship** for the different branches of this trade vary.

- **Transport trailer mechanic:** two years (two 12-month periods) that include a minimum of 1,500 hours of on-the-job training and eight weeks of technical training in the first year and a minimum of 1,800 hours of on-the-job training in the second.
- **Truck and transport mechanic:** three years (three 12-month periods) that include a minimum of 1,500 hours of on-the-job training and eight weeks of technical training each year.
- **Heavy duty equipment mechanic (off-road):** three years (three 12-month periods) that include a minimum of 1,500 hours of on-the-job training and eight weeks of technical training each year.
- **Heavy equipment technician:** four years (four 12-month periods) that include a minimum of 1,500 hours of on-the-job training and eight weeks of technical training each year.

Apprentices are required to provide their own tools. The cost of the tools can range from $10,000 to $25,000.

Applicants who have related training or work experience may be eligible for credit or certification.

Heavy duty equipment mechanic (off-road) and **truck and tranport mechanic** apprentices may attempt the Interprovincial Exam in the final period of their apprenticeship training and, if successful, are granted a Red Seal (which is recognized in most parts of Canada).

Apprentices currently registered in the **old** Heavy Equipment Technician program **must** contact the nearest Alberta Apprenticeship and Industry Training office about the options available for completing their apprenticeship training program.

Technical training is arranged by Alberta Apprenticeship and Industry Training and is currently offered at:

- Keyano College in Fort McMurray
- Lakeland College in Vermilion
- Lethbridge Community College

- the Northern Alberta Institute of Technology (NAIT) in Edmonton and Fairview
- Olds College
- Red Deer College
- the Southern Alberta Institute of Technology (SAIT) in Calgary.

Outside the apprenticeship program, the following post-secondary institutions offer related training:

- **Lethbridge Community College** offers a one year Agricultural and Heavy Equipment Technician certificate program. The entrance requirement is Applied Math 10 or Pure Math 10 and English Language Arts 20-1, 20-2 or equivalent.
- The **Northern Alberta Institute of Technology (NAIT)** in Edmonton offers a two year Industrial Heavy Equipment Technology diploma program. The entrance requirement is a high school diploma or equivalent with English 20 or 33, Pure Math 20 or Math 33 and Physics 30 or Science 30. NAIT also offers a 32-week General Mechanic certificate of achievement. Applicants require English 10 or a Grade 11 English and Math 10 or a Grade 11 Math or equivalent.
- The **Southern Alberta Institute of Technology (SAIT)** in Calgary offers a one year Heavy Equipment Technician certificate program. The entrance requirement is at least 70 Alberta high school credits (Grade 11) with Pure Math 20, Applied Math 20 or Math 23, a Grade 11 English and Grade 11 science.

Pre-employment programs for prospective apprentices and continuing education programs for journeymen may be offered on an as needed basis by the institution(s) listed above or other schools.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

Transport trailer mechanics are employed in transportation company fleet repair shops, trailer dealerships, general mechanical repair shops, manufacturers' repair shops and specialized repair shops.

Truck and transport mechanics are employed in small repair shops, large fleet maintenance companies, transportation companies and construction companies.

Heavy duty equipment mechanics (off road) are employed in specialized repair shops, large fleet maintenance companies, transportation companies and construction companies.

Heavy equipment technicians are employed by specialized repair shops and organizations that own or lease the heavy equipment used in the construction, mining, forestry, material handling, landscaping, land clearing, agriculture and transportation industries.

Experienced journeymen may advance to supervisor or service manager positions. Alberta certified journeyman heavy equipment technicians who have the supervisory or management skills required by industry may apply for an Achievement in Business Competencies Blue Seal by contacting Alberta Apprenticeship and Industry Training.

Heavy equipment technicians are part of the larger National Occupational Classification 7312: Heavy-Duty Equipment Mechanics. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Construction**
- **Oil and Gas Extraction**
- **Wholesale Trade**
- **Repair, Maintenance, Personal and Other Services**
- **Transportation and Warehousing**
- **Metals, Metal Fabrication and Machinery Manufacturing**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 8,950 Albertans are employed in the Heavy-Duty Equipment Mechanics occupational group which is expected to grow 2.0 to 3.0 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 170 to 270 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since heavy equipment technicians form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for heavy equipment technicians.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Apprentice **transport trailer mechanics** earn at least 60 percent of the journeyman wage rate in their place of employment in the first year.

Apprentice **truck and transport mechanics** earn at least 60 percent of the journeyman wage rate in their place of employment in the first year, 70 percent in the second and 80 percent in the third.

Apprentice **heavy duty equipment mechanics (off road)** earn at least 60 percent of the journeyman wage rate in their place of employment in the first year, 70 percent in the second and 80 percent in the third.

Apprentice **heavy equipment technicians** earn at least 60 percent of the journeyman wage rate in their place of employment in the first year, 70 percent in the second, 80 percent in the third and 90 percent in the fourth.

According to the Alberta Provincial Apprenticeship Committee for this trade, journeyman wage rates for the branches vary, but generally range from **$18 to $30 an hour plus benefits** (2005 estimate).

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Heavy-Duty Equipment Mechanics occupational group working part-time or full-time earned from **$22,000 to $126,800 a year.** The average salary was **$55,900 a year.**

Other Sources of Information

Alberta Apprenticeship and Industry Training website: www.tradesecrets.org

Post-secondary institution calendars or websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Construction Industry "Trade Up!" website: www.careersconstruction.com

Calgary Construction Association website: www.cca.cc

Construction Sector Council website: www.csc-ca.org

Related Occupational Profiles

Agricultural Equipment Technician
Automotive Service Technician
Railway Car Mechanic
Safety Officer
Welder

Related High School Subjects

Electro-Technologies; Fabrication Studies; Language Arts; Mathematics; Mechanics; Physical Education; and Science

Related Post-Secondary Fields of Study

Trades, Industrial and Related Training

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Helicopter Pilot

Produced SEPTEMBER 2003

Helicopter pilots transport passengers and freight by helicopter, an aircraft which can move in any direction at varying speeds or remain stationary in the air.

NOC Number(s): 2271.1
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: O I D

Duties

Helicopters are used for various purposes such as:

- taking aerial photographs
- aerial surveys of wildlife
- prospecting
- firefighting
- transporting supplies and equipment to construction sites or oil and gas lease sites
- transporting business executives, medical patients or tourists
- search and rescue
- inspecting power lines and pipelines
- heli-logging
- heli-hiking or heli-skiing.

The duties and working conditions of helicopter pilots can vary a great deal from one job to another but, in general, they:

- determine flight requirements and contact NAV Canada for weather information
- check fuel supply and conduct pre-flight inspections
- ensure that passengers and cargo are loaded properly
- instruct passengers on safety
- operate the helicopter
- navigate using landmarks on the ground, compasses, radio directional equipment and maps
- file flight plans and keep records.

Operating a helicopter involves controlling the direction of flight with your right hand, controlling altitude with your left hand, pushing pedals with your feet to keep the machine pointing in the right direction and, at the same time, scanning the instrument panel and navigating the helicopter. Good co-ordination and many hours of practise are required to master these skills.

Working Conditions

Helicopter pilots employed in remote areas are often away from home for extended periods of time. Their hours of work can be irregular and, some days, they may be on call. Helicopter pilots are often required to load and unload cargo. Dealing with difficult customers and the need to be constantly alert, combined with tight flight schedules or deadlines, can be stressful.

Personal Characteristics

Helicopter pilots need the following characteristics:

- a good sense of spatial orientation
- good judgment and the ability to make decisions and act quickly
- good health, vision (with or without glasses), reflexes and hand-eye co-ordination
- the ability to work with little or no supervision for extended periods of time

- the flexibility required to deal with loads and tasks that vary constantly
- the ability to work and communicate effectively with personnel ranging from labourers to company presidents.

They should enjoy operating aircraft and related equipment, evaluating aircraft performance and directing the work of others.

Educational Requirements

(section revised OCTOBER 2004)

Helicopter pilots must be licensed by Transport Canada. The 100 hour course leading to a Commercial Helicopter Pilot Licence takes three to six months to complete and costs $40,000 to $65,000 depending on the type of helicopter used for training. The 60 hour course for a helicopter endorsement if the candidate already has a Commercial Fixed Wing Licence costs $23,000 to $40,000.

Commercial helicopter pilot training is available through:

- **Aerial Recon Surveys Ltd.** in Whitecourt
- **Bighorn Helicopters Flight School** in Calgary
- **E-Z Air Helicopter Training Inc.** in Edmonton
- **Great Slave Helicopter Flight Training Centre** in St. Albert
- **Millennia Helicopters Ltd.** in Grande Prairie
- **Rotorworks Inc.** in Whitecourt.

A high school diploma is a definite asset but not required. The minimum age to obtain a commercial licence is 18 years. However, some trainers prefer prospective helicopter pilots to be somewhat older because the work requires considerable maturity and emotional stability. Applicants must be able to read and write in English and pass a Transport Canada Category 1 medical examination.

Employment and Advancement

(section revised JANUARY 2006)

Some helicopter pilots are employed full-time. Others work on a seasonal basis from Spring until Fall or work on a contract basis.

Helicopter pilots are part of the much larger National Occupational Classification 2271: Air Pilots, Flight Engineers and Flying Instructors. In Alberta, over 75 per cent of people employed in this classification work in the **Transportation and Warehousing** industry. Helicopter pilots are also employed in the **Forestry and Logging** and **Oil and Gas Extraction** industries.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 2,050 Albertans are employed in the Air Pilots, Flight Engineers and Flying Instructors occupational group which is expected to grow 1.4 to 2.4 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 20 to 50 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since helicopter pilots form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for helicopter pilots.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Air Pilots, Flight Engineers and Flying Instructors occupational group working part-time or full-time earned from **$20,200 to $131,000 a year.** The average salary was **$52,100 a year.**

Related Occupational Profiles

Airline Pilot
Canadian Forces Personnel - Commissioned Officer

Related High School Subjects

Physical Education

Related Post-Secondary Fields of Study

Aviation

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Herbalist

Produced JANUARY 2005

Herbalists advise people about the use of herbs and dietary supplements to maintain good health and relieve symptoms related to conditions such as arthritis, rheumatism, asthma, skin disorders or stomach ailments.

NOC Number(s): 3232.4
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **S I D**

Duties

Herbology is the study of plants and their health benefits. There are a number of different traditions of herbology including Western, Indigenous, Traditional Chinese and Ayurvedic (East Indian).

Herbalists may apply their knowledge of herbology to:

- recommend herbal products for clients
- cultivate herbs
- manufacture herbal compounds and tinctures
- trade herbs for commercial purposes or act as wholesale distributors
- teach or write about herbology.

The duties and responsibilities of clinical herbalists who deal directly with clients depend on where they work and the type of herbology they practice. In general, however, they:

- interview clients about health problems, personal and family medical history, current medical prescriptions and lifestyle
- observe clients to determine their general physical, mental and emotional condition
- determine the most likely underlying health problems
- recommend appropriate dietary changes, supplements or prepared herbal products, create unique mixtures for individual clients or recommend lifestyle changes.

Practical herbalists working in herbal or health food stores answer customers' questions and make recommendations. Those working in herbal wellness centres generally conduct lengthier interviews and may be more knowledgeable.

Working Conditions

Herbalists may work in private homes, stores, clinics (with chiropractors, naturopaths or other health practitioners), wellness centres or greenhouses. Some lifting (up to 10 kilograms) may be required.

Hours of work vary and may include some evenings and weekends. Sometimes, regular clients call herbalists for advice outside of regular working hours.

Personal Characteristics

Herbalists need the following characteristics:

- a genuine interest in working with people on a one-to-one basis and in improving client health
- the ability to communicate and get along well with all kinds of people
- a willingness to upgrade their knowledge of herbology and natural medicines on an ongoing basis.

They should enjoy talking to people, analyzing information and handling herbs.

Educational Requirements

The practice of herbology is not regulated in Alberta. There are **no standard minimum education or training requirements**. However, practising herbalists strongly recommend education or training in herbology, nutrition, anatomy and physiology.

In Alberta, **Grant MacEwan College** in Edmonton offers a two year Holistic Health Practitioner diploma program that includes courses in herbology. The entrance requirement is a high school diploma plus 90 hours of basic human anatomy and physiology or human physiology or equivalent. An interview and skills appraisal may be required. CPR at the Basic Rescuer Level and immunization records are required before the program begins.

Three and four year programs in Traditional Chinese Medicine may include courses in herbology (for more information, see the Acupuncturist occupational profile). Chinese practitioners use animal and insect derivatives as well as plant derivatives.

Before enrolling in an education program, prospective herbalists should discuss their training options with practising herbalists.

Continuing education programs often are offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Other Requirements

Self-employed herbalists may be required to have a municipal business license and should have some form of malpractice insurance.

Employment and Advancement

(section revised JANUARY 2006)

Herbalists work in:

- health food stores
- chiropractic offices
- physiotherapy clinics
- herbal healing centres
- wellness centres.

They may be employed by others or set up their own shops or private practices. Some herbalists work with medical or naturopathic doctors. Some grow herbs for sale, or manufacture herbal products and sell them wholesale to distributors.

Advancement in this occupation generally takes the form of building a larger client base.

Herbalists are part of the larger National Occupational Classification 3232: Midwives and Practitioners of Natural Healing. In Alberta, most people employed in this classification work in the **Health Care and Social Assistance** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Health Care and Social Assistance industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

About 500 Albertans are employed in the Midwives and Practitioners of Natural Healing occupational group which is expected to grow 1.4 to 2.4 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover. (**Note**: Since herbalists form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for herbalists.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Herbalists employed in health food stores earn from **$8 to $15 an hour**. Sales representatives in the health food industry earn from **$24,000 to $70,000 a year**, depending on their experience and sales **(2005 estimates).**

The treatment fees charged by self-employed clinical herbologists vary considerably, ranging from **$60 to $280 an hour (2005 estimate).** Their take-home pay for any given period depends on the number of clients they see and their overhead costs (e.g. the cost of renting office space) Some herbalists supplement their incomes via product sales from dispensaries.

Other Sources of Information

Post-secondary institution calendar and website (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Related Occupational Profiles

Acupuncturist
Food Science Technologist
Homeopath
Massage Therapist
Midwife
Naturopathic Doctor
Reflexologist

Related High School Subjects

Agriculture; Community Health; Foods; Physical Education; and Science (Biology; and Chemistry)

Related Post-Secondary Fields of Study

Health Care and Medical Sciences; Human Ecology, Fashion and Food Sciences; and Personal and Food Services

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For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Heritage Interpreter

Produced NOVEMBER 2003

Heritage interpreters provide information by conducting tours or role playing for visitors to museums, gallery exhibitions and historical, heritage and related sites.

NOC Number(s): 5212.3
Minimum Education: 2 years post-secondary education/training
Employment Outlook: Employment turnover plus below average occupational growth in Alberta
Interests: **S M d**

Duties

Duties and responsibilities may vary considerably from one position to another in this occupation but, in general, heritage interpreters:

- research information relevant to the museum, gallery, exhibit or historical site
- welcome visitors and provide orientation and general information
- interact with visitors, respond to questions, conduct visitor surveys, monitor visitor activity and handle emergency situations (e.g. medical emergencies, building evacuations)
- prepare brochures, write newspaper articles and assist with exhibit or display development
- design, develop and maintain props and teaching aids (e.g. historical or theatrical costumes)
- develop, present and evaluate educational programming and demonstrations for the general public or particular audiences (e.g. young children, students, seniors)
- help develop and deliver programs, activities and special events that engage the visiting public in an entertaining and informative manner
- co-ordinate volunteer activities and schedule, supervise and evaluate volunteers
- assist with general facility operations.

To make information interesting and meaningul to visitors, heritage interpreters may act the part of a real or fictional character or provide hands-on learning opportunities.

Working Conditions

Heritage interpreters may work indoors in museums or galleries, or outdoors at historical or heritage sites. They may spend much of their time on their feet. They make work part-time or full-time, and often work evenings and weekends.

Personal Characteristics

Heritage interpreters need the following characteristics:

- an enthusiastic interest in their subject field
- the ability to communicate effectively with visitors and consistently deliver programs and tours in a pleasant, confident and engaging manner
- the ability to relate well to all kinds of people and work as part of a team
- creativity for developing presentations
- writing skills for developing education and marketing materials
- flexibility (e.g. adjusting work schedules, multi-tasking)
- the ability to remain calm and take charge in emergency situations.

They should enjoy talking to people, synthesizing information to develop innovative programs and conducting tours.

Educational Requirements

Heritage interpreters need a **combination of related post-secondary education and experience**. This is a multi-disciplinary field that draws from a wide range of academic disciplines, including education, recreation and leisure studies, communication arts and other liberal arts disciplines (e.g. anthropology, archeology, history, native studies, fine arts, crafts, performing arts, psychology, sociology). The ability to speak two or more languages is a definite asset.

Post-secondary institutions located throughout Alberta offer programs that provide a suitable background for heritage interpreters. Admission requirements for degree programs vary depending on the program and the institution but generally include a high school diploma or equivalent with an average of at least 60 per cent (70 per cent for some programs) in English 30 and four other specified Grade 12 subjects (e.g. Social Studies 30 or a 30-level language other than English, 30-level math or science courses).

When choosing a post-secondary program, prospective heritage interpreters should discuss their career plans with people currently employed as heritage interpreters.

Alberta Tourism Education Council (ATEC) offers a nationally-recognized certification program for heritage interpreters that requires completion of 900 hours of on-the-job experience, a workbook and written exam, and independent industry evaluation.

Associations such as **Interpretation Canada**, **Museums Alberta** and the **Canadian Museums Association** also offer professional development opportunities.

The following Alberta post-secondary institutions offer related management programs:

- **Grant MacEwan College** in Edmonton offers a 10 month Arts and Cultural Management certificate program that includes seven months of classroom study followed by two and a half month internship. Applicants should have related experience and post-secondary education, and good references. Some courses are available on-line.
- The **University of Calgary** Faculty of Continuing Education offers a 300-hour Heritage Resource Management certificate program through Continuing Education that includes 124 hours of workplace practicum. The entrance requirement is a high school diploma but consideration will be given applicants who do not have a high school diploma. Applicants should have significant related experience.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

(section revised JANUARY 2006)

Interpreters may be employed full-time, part-time or on a contract basis by:

- parks
- historic sites
- museums
- private tour operators.

Many positions are seasonal. These temporary positions can provide excellent experience for students or supplementary income for retired or semi-retired persons. Competition for permanent positions is keen so related work experience (as an employee or volunteer) is essential.

Experienced interpreters may:

- advance to supervisory and management positions such as chief interpreter, program co-ordinator, district interpretation and education supervisor
- move into administrative positions in planning, operations or programming
- move into related fields such as commercial or tour company guiding, public relations, marketing or education.

In some organizations, advancement to supervisory and management positions requires a graduate degree as well as several years of related experience.

Heritage interpreters are part of the much larger National Occupational Classification 5212: Technical Occupations Related to Museums and Art Galleries. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Information, Culture and Recreation**
- **Public Administration**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- time of year (for seasonal jobs)
- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 400 Albertans are employed in the Technical Occupations Related to Museums and Art Galleries occupational group which is expected to grow 0.7 to 1.7 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover. (**Note**: Since heritage interpreters form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for heritage interpreters.)

Salary

(section revised OCTOBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Technical Occupations Related to Museums and Art Galleries occupational group working part-time or full-time earned from **$14,700 to $75,800 a year.** The average salary was **$32,200 a year.**

Other Sources of Information

(section revised OCTOBER 2005)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Tourism Education Council (ATEC) website: www.atec.ca

Canadian Museums Association website: www.museums.ca

Interpretation Canada website: www.interpcan.ca

Museums Alberta website: www.museumsalberta.ab.ca

Related Occupational Profiles

Curator
Interpretive Naturalist
Museum Technician
Outdoor Sport/Recreation Guide
Tour Guide

Related High School Subjects

Communication Technology; Community Health; Fine Arts (Drama); Language Arts; Mathematics; Science; Social Studies; and Tourism Studies

Related Post-Secondary Fields of Study

Communications; Education and Library Studies; Fine Arts and Performing Arts; Human Ecology, Fashion and Food Sciences; Humanities and Languages; Physical Education and Recreation; and Social Sciences, Law and Religious Studies

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For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Historian

Produced NOVEMBER 2005

Historians research, analyze, interpret, synthesize and document human, cultural and technological history.

NOC Number(s): 4169.4
Minimum Education: 6 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **I D M**

Duties

Historians may be involved in cross-cultural or interdisciplinary studies, or they may specialize in:

- the history of a particular country, region, person or group of people (e.g. those of a particular ethnic origin, religion, gender or sexual orientation)
- a time period
- a certain aspect of the past (e.g. agrarian, artistic, architectural, economic, feminist, military, political, social or technological history).

In general, historians:

- attempt to reconstruct and interpret the past by studying and analyzing original documents such as correspondence, diaries, newspaper files, oral history tapes, photographs, artifacts and other physical evidence
- research and prepare manuscripts in support of public programming and the development of exhibits at historic sites, museums, libraries and archives
- develop meaningful information systems by selecting, organizing and interpreting material
- conduct historical research as a basis for the establishment, conservation and reconstruction of national parks and historic sites
- teach and conduct research in colleges, universities, museums and other research agencies and schools
- conduct historical research as expert witnesses in legal cases
- conduct historical research for film and television programming
- conduct oral history interviews
- organize information for publication in print or other media.

Working Conditions

Historians may work alone or with a team on a project at a historical site, museum, archive or other heritage site. They rely on computers for word processing, desktop publishing, database and spreadsheet functions. If the work is of a design nature, photographic, drawing or drafting programs and equipment may be required.

Their research may require historians to travel to other cities or regions.

Personal Characteristics

Historians need to be effective communicators in person and in writing.

They should enjoy:

- co-ordinating information and finding innovative approaches to their work
- consulting with others and organizing their own activities
- taking a methodical approach to their research.

Educational Requirements

A Master of Arts (MA) degree in history is the minimum education requirement for most research positions. Historians working in heritage agencies such as museums and historic sites also may be required to be familiar with technologies used to present information to the public (e.g. Internet, CD-ROM, audio-visual). University positions require a doctoral (PhD) degree.

In general, the entrance requirement for a Master of Arts degree program is a related four year bachelor's degree with an above average grade point average. In Alberta, the following institutions offer **four year** bachelor's degree programs in history.

- **Athabasca University** offers a Bachelor of Arts (BA) degree program in History by distance education. Applicants must be at least 16 years of age.
- **The King's University College** in Edmonton offers a four year Bachelor of Arts (BA) in Politics, History and Economics degree program. The entrance requirement is an average of at least 60 per cent in English Langauge Arts 30-1 (or English 30) and four other appropriate Grade 12 subjects.
- The **University of Alberta** in Edmonton offers BA and BA (Honours), MA and PhD degree programs in History. The entrance requirement for the BA program is a competitive average of 65 to 80 per cent in English Language Arts 30-1 (or English 30), a 30-level language other than English or Pure Math 30 (or Math 30), and three other approved Grade 12 subjects (Social Studies 30 recommended). Students may apply to the honours program after one year of university studies. The University of Alberta in Camrose also offers bachelor degree programs in history.
- The **University of Calgary** offers a four year and a five year (co-op) BA degree programs, and MA and PhD programs in History. The entrance requirement for the bachelor's degree programs is a high school diploma or equivalent with a competitive average in English Language Arts 30-1 (or English 30), Pure Math 30 or Math 30 or 31, and three of the following: Biology 30, Chemistry 3, Physics 30, Science 30, Social Studies 30, a 30 level language other than English, one five-credit Grade 12 subject.
- The **University of Lethbridge** offers four year BA and Bachelor of Arts and Science degree programs, five year combined degree programs and a MA program in History. The entrance requirement for the bachelor's degree programs is an average of at least 65 per cent in English Language Arts 30-1 (or English 30), three other appropriate 30-level subjects and a fifth Grade 12 subject.

Post-secondary institutions throughout the province offer university transfer programs that allow students to apply up to two years of course work toward university bachelor's degree programs. It is the student's responsibility to ensure that the courses they choose to take will be accepted for credit at the institution to which they wish to transfer.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

(section revised JANUARY 2006)

Historians are employed as consultants, researchers and instructors by:

- colleges and universities
- municipal, provincial and federal governments
- museums, historic sites and interpretive centres
- libraries and archives
- private businesses and agencies (e.g. television/movie production companies).

Many historians are employed on a contract basis.

Those who have BA and MA degrees may use their research, writing and analytical skills to move into other fields such as banking or information management, or to write federal civil service examinations for government departments such as External Affairs. With additional education, history graduates may move into related fields such as law, education, journalism, architecture or interior design.

Historians are part of the much larger National Occupational Classification 4169: Other Professional Occupations in Social Science. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Professional and Technical Services**
- **Public Administration**
- **Educational Services**
- **Health Care and Social Assistance**

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 350 Albertans are employed in the Other Professional Occupations in Social Science occupational group which is expected to grow 1.5 to 2.5 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover. (**Note**: Since historians form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for historians.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Other Professional Occupations in Social Science occupational group working part-time or full-time earned from **$31,800 to $79,600 a year.** The average salary was **$54,900 a year.**

Salaries for university positions vary with:

- personal qualifications
- academic qualifications
- administrative responsibilities
- the particular faculty and university.

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Related Occupational Profiles

Archivist
Curator
Political Scientist

Related High School Subjects

Communication Technology; Language Arts; Mathematics; and Social Studies

Related Post-Secondary Fields of Study

Humanities and Languages

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Home Economist

Produced MARCH 2005

Home economists enhance people's quality of life by providing advisory, counselling, management, promotion and education services related to money management, consumer education, foods and nutrition, home design, clothing and textiles, and family function.

NOC Number(s): 4164.2
Minimum Education: 4 years post-secondary education/training
Employment Outlook: Employment turnover plus below average occupational growth in Alberta
Interests: **I D S**

Duties

Home economists develop and deliver programs on topics such as human relationships and human development, financial management, business development and marketing, food, nutrition, clothing, textiles and housing. They may be generalists or specialize in a particular subject area. For example, home economists may:

- teach and advise adults and children in areas such as food preparation, daily nutrition, clothing, textiles, financial management, time management, life skills or family relationships
- develop and promote new food products or work in nutrition-related research
- work as specialists in nutrition and food processing or food storage, preparation and safety
- work as specialists in textile and apparel product development, fashion and costume design, protective clothing for industry, interior decorating, museum conservation or retail management
- educate consumers about housing-related issues such as home appliances, home energy or home design and construction
- help potential entrepreneurs plan small businesses
- provide leadership for organizational and community development
- work as retail buyers, or marketing or merchandizing specialists.

Working Conditions

Home economists generally work in an office environment but also may work in a wide variety of settings with business and community groups. Their hours of work may include some evening and weekend work. Travel may be required.

Personal Characteristics

Home economists need the following characteristics:

- a genuine interest in people and in helping others
- strong management, organization and leadership skills
- adaptability, creativity, initiative and independence
- well developed communication and presentation skills.

They should enjoy co-ordinating information and developing innovative approaches to problems, consulting with and advising consumers, and working with food products, textiles or other consumer goods.

Educational Requirements

The minimum educational requirement is a four year Bachelor of Science (B.Sc.) degree in home economics, human ecology, family and consumer sciences, nutrition and food sciences, or equivalent.

In Alberta, the **University of Alberta** in Edmonton offers:

- a four year B.Sc. program in Human Ecology with specializations in community studies, family and consumer studies, and textiles and clothing. The entrance requirement is an average of at least 70 per cent in English 30, Pure Math 30, Biology 30 or Chemistry 30 and two other approved Grade 12 subjects. Clothing and Textiles 30 or advanced level credits in CTS Fashion Studies Strand are recommended for students entering the textiles, clothing and culture specialization. Chemistry 30 is recommended for students interested in conservation of historic textiles or textile science.
- a four year B.Sc. program in Nutrition and Food Sciences with specializations in food science technology, foods and nutrition, or nutrition. The entrance requirement is an average of at least 70 per cent in English 30, Math 30, Biology 30, Chemistry 30 and one other approved Grade 12 subject (Physics 30 recommended).

Home economics teachers in schools must have a Bachelor of Education (B.Ed.) degree. They may take a B.Ed. degree program with a specialization in human ecology or a combined B.Sc. (Human Ecology)/B.Ed. degree program, or complete a Bachelor of Education (After Degree) program after completing a B.Sc. degree in Human Ecology or Nutrition and Food Sciences. For more information, see the Career and Technology Studies Teacher occupational profile.

Post-secondary institutions throughout the province offer university transfer programs that allow students to apply up to two years of study toward university bachelor degree programs. It is the student's responsibility to ensure that the courses they choose to take will be accepted for credit at the institution to which they wish to transfer.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Other Requirements

(section revised JANUARY 2006)

Professional Home Economist and Professional Human Ecologist are protected titles under Alberta's Professional and Occupational Associations Registration Act and Human Ecologist and Home Economist Regulation. This means that to call yourself a Professional Home Economist or Professional Human Ecologist, you must be a registered member of the Alberta Human Ecology and Home Economics Association (AHEA). You do **not** have to be registered if you do not call yourself a Professional Home Economist or Professional Human Ecologist.

Employment and Advancement

(section revised JANUARY 2006)

Home economists may be employed by or work on a contract basis for:

- consulting firms
- community, government or non-governmental agencies
- utility companies
- retail outlets
- food manufacturers or retailers
- home design firms
- apparel/fashion manufacturers or retailers
- professional associations
- international aid and development agencies.

With additional training or experience, home economists may become dietitians in hospitals or food service institutions (for more information, see the Dietitian occupational profile), textile conservators or museum curators (see the Conservator and Curator occupational profiles), or teach in junior and senior high schools, technical institutes or universities. Research positions generally require a post-graduate (master's or doctoral) degree.

Home economists are part of a larger health and social policy researchers occupational group. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Public Administration**
- **Health Care and Social Assistance**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)

- **size of the occupation.**

Over 1,600 Albertans are employed in the Social Policy Researchers, Consultants and Program Officers occupational group which is expected to grow 0.6 to 1.6 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover. (**Note**: Since home economists form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for home economists.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Social Policy Researchers, Consultants and Program Officers occupational group working part-time or full-time earned from **$20,800 to $86,800 a year.** The average salary was **$54,100 a year.**

Other Sources of Information

Post-secondary institution calendar or website (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Home Economics Association website: www.ahea.ab.ca

Related Occupational Profiles

Career and Technology Studies Teacher
Career Development Professional
Child and Youth Care Worker
Costume Designer
Craftsperson
Fashion Designer
Food Scientist
Interior Decorator
Life Skills Coach
Market Research Analyst
Public Relations Representative
Special Event Co-ordinator
Volunteer Manager

Related High School Subjects

Communication Technology; Fashion Studies; Financial Management; Foods; Language Arts; Management and Marketing; Mathematics; and Science (Biology; Chemistry; and Physics)

Related Post-Secondary Fields of Study

Human Ecology, Fashion and Food Sciences

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Home Inspector

Produced SEPTEMBER 2003

Home inspectors visually examine buildings and write reports about the condition of major components such as the roof, structure, exterior, insulation, plumbing, electrical systems, heating and other systems and components.

NOC Number(s): 2264
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **M I d**

Duties

Home inspectors visually inspect house and apartment systems and components, looking for damage, evidence of deterioration or amateur maintenance work. They are hired by potential buyers or sellers to prepare detailed reports. Reports may be narrative or detailed checklists with notes about identified problems, how problems can be repaired, what will probably happen if repairs are not made and how much it will probably cost to make repairs. To avoid potential conflicts of interest, home inspectors cannot be involved in the sale of real estate or the repair of problems identified during inspections.

If they can do so without damaging finished surfaces, inspectors may probe structural components that show signs of deterioration. Otherwise, they note their observations in their reports and may recommend further evaluation.

On building exteriors, home inspectors check items such as:

- wall coverings, flashing and trim
- doors
- attached decks, balconies, stoops, steps, porches and railings
- eaves, soffits and fascias if they are accessible from ground level
- vegetation, grading, surface drainage and retaining walls if they might adversely affect the building
- walkways, patios and driveways.

On the roof, they check the roof covering, drainage systems, flashings and roof penetrations such as skylights and chimneys.

Inside, they check items such as:

- plumbing systems (water supply and distribution systems, fixtures and faucets, drains, vents, water heating equipment, etc.)
- electrical systems (service equipment and main disconnects, panels, conductors, over-current protection devices, a sampling of fixtures, switches and receptacles, etc.)
- heating and air conditioning systems and fireplaces
- walls, ceilings, floors, stairs, railings and a representative sampling of cabinets
- insulation and ventilation.

Home inspectors do not check items such as chimneys that are not readily accessible or the operation of accessories such as air filters, water softeners or lawn sprinklers.

Working Conditions

Self-employed home inspectors usually work from their own homes. Their hours are flexible but they often must work evenings and weekends to meet deadlines and accommodate clients' work schedules. Long working hours are common in the Spring and Fall.

The work is physically and emotionally demanding. For example, home inspectors are routinely required to squeeze into tight spaces, lift items weighing up to 10 kilograms and climb onto roofs. To avoid injury, they must follow safety precautions when inspecting electrical systems, roofs and other components. Dealing with real estate agents who want to close sales quickly and clients who have unrealistic expectations can be stressful.

Personal Characteristics

Home inspectors need the following characteristics:

- good oral and written communication skills
- good interpersonal skills
- integrity and the ability to disregard attempts to influence their reports
- the ability to present bad news diplomatically and deal effectively with people when they are upset
- the ability to understand complex technical documents such as manufacturers' specifications
- excellent observation skills.

They should enjoy taking a methodical approach to their work, analyzing their observations and dealing with people.

Educational Requirements

There is **no standard minimum education requirement** for home inspectors in Alberta. Most inspectors have a combination of education and training in one or more related fields (e.g. journeyman certification as a carpenter, electrician or plumber; courses in architectural technology, civil engineering or civil engineering technology) plus extensive work experience in construction or maintenance. They need indepth knowledge of:

- new and old electrical, plumbing, heating, ventilation and cooling systems, roofing and structural systems
- how different systems interact in a home
- hazardous materials that have been used in home construction
- causes and effects of deterioration in building systems and recommended remedies
- safety standards.

Full membership in the **Canadian Association of Home and Property Inspectors, Alberta Chapter** requires:

- successful completion of specified safety codes and heating, plumbing and electrical inspection courses
- successful completion of two CAHPI exams
- verification of the inspector's reporting system
- two mock inspections
- proof of adequate errors and omissions insurance
- compliance with the CAHPI code of ethics
- 250 fee-paid inspections.

The required safety codes courses are offered by the **Safety Codes Council** and the heating, plumbing and electrical inspection courses are available by distance education through the **Southern Alberta Institute of Technology (SAIT)**. Associate members are required to complete all of the above requirements with the exception of the 250 fee-paid inspections and are expected to become full members within three years.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

(section revised JANUARY 2006)

Home inspectors are hired by people who want an unbiased opinion about the condition of a house or an apartment that they are thinking about buying or selling. Most home inspectors are self-employed. To start their own businesses, they need a reliable vehicle, a computer, tools (e.g. ladder, moisture meter, gas detector, carbon monoxide detector) and the financial resources required to cover overhead costs until their businesses are established. Errors and omissions insurance is essential because home inspectors may be sued or required to pay for repairing problems they did not detect.

Some inspectors purchase home inspection franchises which provide support, training and marketing services.

Home inspectors are part of the larger National Occupational Classification 2264: Construction Inspectors. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Construction**
- **Professional and Technical Services**
- **Public Administration**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- time of year (for seasonal jobs)

- trends and **events** affecting overall employment and the real estate market
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 1,050 Albertans are employed in the Construction Inspectors occupational group which is expected to grow 2.0 to 3.0 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 20 to 40 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since home inspectors form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for home inspectors.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Incomes for self-employed home inspectors vary considerably:

- from one inspector to another, depending on the inspector's qualifications and business, marketing and customer service skills
- from one season to another (Spring and Fall are usually the busiest seasons)
- from one year to another, depending on the level of activity in the local real estate market.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Construction Inspectors occupational group working part-time or full-time earned from **$24,700 to $94,900 a year.** The average salary was **$60,300 a year.**

Other Sources of Information

Post-secondary institution calendar and website (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Canadian Association of Home and Property Inspectors, Alberta website: www.cahpi-alberta.com

Safety Codes Council website: www.safetycodes.ab.ca

Related Occupational Profiles

Carpenter
Electrician
Plumber
Safety Codes Officer

Related High School Subjects

Construction Technologies; Design Studies; Electro-Technologies; Fabrication Studies; Language Arts; Legal Studies; and Physical Education

Related Post-Secondary Fields of Study

Engineering and Science Technologies; and Trades, Industrial and Related Training

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For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Homeopath

Produced OCTOBER 2004

Homeopaths promote wellness by suggesting lifestyle changes and treat ailments by administering small doses of natural substances that cause similar symptoms.

NOC Number(s): 3232.5
Minimum Education: 5 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **S I D**

Duties

Homeopathy is based on the principle that like cures like. Homeopaths administer very small amounts of natural substances which would produce similar symptoms of illness to those the patient is already experiencing. As with vaccinations, small amounts stimulate the body to fight the cause of the symptoms.

Homeopaths conduct extensive interviews with new patients. They ask questions about external and internal factors that may contribute to a patient's symptoms. Based on their analysis of contributing factors, homeopaths may recommend lifestyle changes (e.g. diet, excercise) or recommend a homeopathic remedy. Since people often react to the same substances differently, homeopaths must consider a variety of factors when selecting remedies.

When a patient has acute or obvious symptoms, diagnosis and treatment may be straightforward. In more difficult cases, homeopaths research information about remedies that have worked in the past for patients who had similar characteristics and symptoms. Usually, this involves accessing information stored in databases. Finding a remedy that works may require several consultations.

Homeopaths also:

- instruct patients about how to use remedies
- manage homeopathic clinics
- participate in public education activities that promote health and wellness.

Working Conditions

Homeopaths may work from their homes or operate private clinics in Alberta. They set their own hours but must work some evening and weekend hours to meet patient needs. Travel is required when homeopaths practice from more than one location.

Self-employment and continuous patient contact can be stressful.

Personal Characteristics

Homeopaths need the following characteristics:

- excellent observational skills
- excellent communication skills
- patience
- persistence
- an unprejudiced, open mind
- analytical ability.

They should enjoy analyzing information provided by patients, performing tasks requiring precision, and helping patients regain and maintain good health.

Educational Requirements

Homeopaths come from a variety of backgrounds. A number of organizations offer programs of study or certification programs leading to professional designations such as the following:

- CCH (Certified in Classical Homeopathy) offered by the Council for Homeopathic Certification to qualified applicants who pass a series of examinations.
- DHANP (Diplomate of the Homeopathic Academy of Naturopathic Physicians) offered by the Homeopathic Academy of Naturopathic Physicians, a specialty society in the profession of naturopathic medicine. General membership in HANP is open to all. See the Naturophathic Doctor occupational profile for information about the occupation.
- DHMHS (Diploma in Homeopathic Medicine and Health Sciences) offered by the Ontario College of Homeopathic Medicine.
- DHMS (Diploma in Homeopathic Medicine and Sciences) offered by the Homeopathic College of Canada and accredited by the Ontario Homeopathic Association.
- DHt (Diploma of Homeotherapeutics) offered by the American Institute of Homeopathy. Members of AIH are medical or osteopathic physicians, dentists, advanced practice nurses or physician assistants. For more information, see the Physician, Dentist, Registered Nurse and Licensed Practical Nurse occupational profiles.
- RSHom(NA) (Registered Member of the Society of Homeopaths, North America) offered by the North American Society of Homeopaths. Registered members of NASH have been certified by the Council for Homeopathic Certification.

The following Canadian institutions offer courses or programs in homeopathy:

- The **Homeopathic College of Canada** in Toronto offers distance education and classroom courses.
- **Luminos Homeopathic Courses Ltd.** in West Vancouver offers a four year part-time program via distance education and classroom courses in various locations.
- The **Manitoba College of Homeopathic Medicine** in Winnipeg offers a three year program.
- The **Ontario College of Homeopathic Medicine** in Toronto offers a three to four year diploma program and an 18 month distance education or classroom program for health professionals. At least two years of previous post-secondary education is recommended.
- The **Toronto School of Homeopathic Medicine** offers distance education and classroom programs.

Other Requirements

The practice of homeopathy is not regulated anywhere in Canada. However, two pieces of legislation are relevant to the practice of homeopathy in Alberta:

- Homeopaths may not perform restricted activities defined in the Government Organization Act.
- Homeopaths may use titles and words such as doctor, registered and regulated only as defined in the Health Professions Act.

Employment and Advancement

(section revised JANUARY 2006)

Homeopaths are self-employed practitioners who may work from their homes or operate private clinics. Some homeopaths travel to offer services in more than one location.

In this occupation, advancement generally involves building a larger practice.

Homeopaths are part of the larger National Occupational Classification 3232: Midwives and Practitioners of Natural Healing. In Alberta, most people in this classification work in the **Health Care and Social Assistance** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Health Care and Social Assistance industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

About 500 Albertans are employed in the Midwives and Practitioners of Natural Healing occupational group which is expected to grow 1.4 to 2.4 per cent each year from 2005 to 2010 in Alberta. (**Note**: Since homeopaths form only a small part of the larger occupational group on which this forecast is based, less than one new homeopath position is likely to be created each year.)

Salary

Incomes vary considerably in this occupation. Homeopaths may earn very little until they have established a large enough practice to make a profit. They may charge set fees per visit and/or charge for homeopathic remedies.

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

American Institute of Homeopathy (AIH) website: www.homeopathyusa.org

Council for Homeopathic Certification (CHC) website: www.homeopathicdirectory.com

Homeopathic Academy of Naturopathic Physicians (HANP) website: www.hanp.net

Homeopathic Medical Council of Canada (HMCC) website: www.hmcc.ca

National United Professional Association of Trained Homeopaths Canada (NUPATH) website: www.nupath.org

North American Society of Homeopaths (NASH) website: www.homeopathy.org

Ontario Homeopathic Association (OHA) website: www.ontariohomeopath.com

Related Occupational Profiles

Acupuncturist
Herbalist
Massage Therapist
Midwife
Naturopathic Doctor

Related High School Subjects

Community Health; Financial Management; Information Processing; Language Arts; and Science (Biology; and Chemistry)

Related Post-Secondary Fields of Study

Health Care and Medical Sciences; and Personal and Food Services

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For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Hotel and Motel Desk Clerk

Produced MAY 2003

Desk clerks are employed in hotels and motels, and are often the first people to greet incoming guests.

NOC Number(s): 6435
Minimum Education: High school diploma
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: S M o

Duties

When new guests arrive, desk clerks:

- welcome them
- register them
- assign rooms and issue room keys or cards
- provide information about services available in the hotel and in the community
- verify customers' credit and establish how the customer will pay for the accommodation
- promote and sell guest rooms.

When guests check out, desk clerks:

- review accounts with them
- receive payment for accounts
- balance cash accounts
- advise housekeeping which rooms have been vacated and are ready for cleaning.

Desk clerks may also:

- keep an inventory of rooms reservations
- respond to reservation enquiries
- answer telephones and take messages
- handle guest mail
- record guest comments
- deal with customer complaints or refer dissatisfied customers to a manager.

In small hotels, desk clerks may also have administrative responsibilities (for more information, see the Administrative Assistant profile). On the night shift, desk clerks may assume the duties of assistant manager, night cashier, concierge (manager of guest services) or night auditor.

In large hotels, front desk duties may be divided among several desk clerks.

Working Conditions

Desk clerks work shifts, including weekends and holidays. They must remain standing for most of their working hours.

Personal Characteristics

Desk clerks provide one of the first impressions of a hotel or motel services so they must be:

- pleasant, tactful and patient
- able to communicate well with a wide variety of people
- able to sell the services of their establishment
- committed to providing good service.

They should enjoy dealing with people, taking a methodical approach to compiling information, and operating computerized and manual systems.

Educational Requirements

(section revised OCTOBER 2005)

Since employers look for job applicants who have experience meeting people and handling cash, work experience in the hospitality industry or in retail sales is a definite asset. Employers also look for evidence of good judgement in potential employees because desk clerks may be put in the position of having to deal with problem patrons and emergency or security problems.

Many employers hire **high school graduates** for desk clerk positions. Some hotels provide training on the job, but **related post-secondary education or certification** is preferred.

Front desk clerks who wish to advance into hotel management may take any of the business administration and management programs offered by post-secondary institutions throughout Alberta. The following institutions offer programs of study directly related to the hospitality and tourism industry:

- The **Northern Alberta Institute of Technology** in Edmonton offers a one year certificate and a two year Hospitality Management diploma program. The minimum education requirement for both programs is Grade 11 including English and math.
- **Red Deer College** offers one year certificate and two year diploma programs in Hospitality and Tourism with specializations in accounting and finance management, food and beverage management, and rooms and marketing management. The entrance requirement is a high school diploma or equivalent.
- **Robertson College** offers a 40-week International Hospitality and Hotel Management program. The entrance requirement is a high school diploma with a Grade 12 English.
- The **Southern Alberta Institute of Technology (SAIT)** in Calgary offers a Hotel and Restaurant Management diploma program. The entrance requirement is a high school diploma or equivalent with English 30 or 33, and Pure or Applied Math 30 or Math 33.
- **Training Inc.**, a private vocational school in Lethbridge, offers a 12 week Hotel and Restaurant Operations program. Applicants must contact the school for entrance requirements.
- **Trend College**, a private vocational school in Edmonton, offers a 34 week Hotel and Tourism Management Studies program and a 50 week International Hotel and Tourism Management Studies program. Applicants must be at least 19 years of age, attend a personal interview, have the approval of the program co-ordinator, and have a high school diploma with English 30 or 33 or equivalent.
- The **University of Calgary** offers a Bachelor of Hotel and Resort Management degree program that may also be taken as a co-op program. Applicants must be admitted to an approved two year diploma program such as the Hotel and Restaurant Management program at SAIT (see above) and achieve a minimum grade point average of 3.0/4 in the diploma program before they are admitted to the BHRM program. The University of Calgary also offers four year and five year co-op Bachelor of Commerce degree programs in Tourism and Hospitality Management. The entrance requirement for the B.Comm. program is a high school diploma with an average of at least 72 per cent in English 30, Math 30 or Pure Math 30, and three of the following subjects: Social Studies 30, Biology 30, Chemistry 30, Physics 30, Science 30, a 30-level language other than English, or one five credit Grade 12 subject.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Contact the **Alberta Hotel and Lodging Association** for information about a home study course for front desk clerks offered by the **Educational Institute of the American Hotel and Motel Association** or contact the Educational Institute directly.

The **Alberta Tourism Education Council (ATEC)** has developed a process for front desk agents to demonstrate their skills and write an examination to earn a certificate that is recognized across Canada in the tourism and hospitality industry.

Employment and Advancement

(section revised JANUARY 2006)

In a large hotel, employees who do not have related post-secondary education generally start in positions such as telephone operator, guest services attendant or cashier, and advance to desk clerk positions when they become available. Employment for desk clerks is steady and year-round, except in summer hotels and resort operations. In some establishments, hours may be reduced during slower periods.

Desk clerks may advance to assistant front office and front office manager positions, particularly if they have or are willing to take related post-secondary education.

Hotel and motel desk clerks are part of the larger National Occupational Classification 6435: Hotel Front Desk Clerks. In Alberta, people employed in this classification work in the **Accommodation and Food Services** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- time of year (for seasonal jobs)
- trends and **events** affecting overall employment (especially in the Accommodation and Food Services industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 2,500 Albertans are employed in the Hotel Front Desk Clerks occupational group which is expected to grow 1.1 to 2.1 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 20 to 60 **new** positions will be created each year **in addition** to job openings created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Salaries for desk clerks vary greatly according to the size and location of the hotel, and the clerk's experience and degree of responsibility.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Hotel Front Desk Clerks occupational group working part-time or full-time earned from **$13,000 to $40,400 a year.** The average salary was **$21,200 a year.**

Other Sources of Information

(section revised OCTOBER 2005)

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Hotel and Lodging Association website: www.albertahotels.ab.ca

Alberta Tourism Education Council (ATEC) website: www.atec.ca

American Hotel and Lodging Association, Educational Institute website: www.ei-ahma.org

Related Occupational Profiles

Accommodation Manager
Guest Services Attendant
Receptionist

Related High School Subjects

Language Arts; and Tourism Studies

Related Post-Secondary Fields of Study

Business, Management and Administrative Studies; and Personal and Food Services

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For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Human Ecologist

Produced JANUARY 2006

Human ecologists provide advisory, counselling, management, research and education services related to family functioning, parenting, consumer education, money management, textiles and clothing, foods and nutrition and community resources.

NOC Number(s): 4164.2
Minimum Education: 4 years post-secondary education/training
Employment Outlook: Employment turnover plus below average occupational growth in Alberta
Interests: I D S

Duties

Human ecologists use a holistic, preventative approach to help people optimally manage their daily lives. For example, they may develop and deliver programs related to a wide range of topics:

- parenting
- intimate relationships
- financial management
- community leadership
- meal planning and food choices
- small business development
- marketing and public relations
- textiles and clothing production and consumption
- life skills and lifestyle management
- career planning.

Human ecologists may:

- provide leadership for organizational and community development
- advise and coach individuals on career development, lifestyle management and personal image
- conduct research on the impact of public policy on children and families
- link individuals and families with community resources
- provide leadership in delivering family and youth support services
- work as specialists in nutrition education and promotion, food preparation and food safety
- specialize in fashion merchandising, protective clothing design, apparel design or production, interior decorating, textile science or quality control testing
- teach and advise adults and children regarding life skills.

Working Conditions

Human ecologists work in a variety of office and field settings with business and community groups. Some work in corporate and government office environments; others work in manufacturing plants, retail stores, small businesses and not-for-profit service agencies. Depending on the nature of their work, some evening and weekend work, as well as travel, may be required.

Personal Characteristics

Human ecologists need the following characteristics:

- a genuine interest in people and in helping others
- strong management, organization and leadership skills
- a team-oriented, collaborative approach to work
- adaptability, creativity, initiative and independence

- excellent communication and presentation skills.

They should enjoy coordinating information, developing innovative approaches to problems, and consulting with and advising clients and customers.

Educational Requirements

The minimum educational requirement is a four year Bachelor of Science (B.Sc.) degree in home economics, human ecology, family and consumer sciences, nutrition and food sciences, or equivalent.

In Alberta, the University of Alberta in Edmonton offers:

- a four year B.Sc. program in Human Ecology with specializations in family ecology and textiles and clothing. Minor specializations include child and youth studies, aging, community diversity, community nutrition, fashion merchandising, museum studies, and design and product development. The entrance requirement is an average of at least 70 per cent in English 30, Pure Math 30, Biology 30 or Chemistry 30 and two other approved Grade 12 subjects. Clothing and Textiles 30 or advanced level credits in CTS Fashion Studies Strand are recommended for students entering the textiles and clothing specialization. Chemistry 30 is recommended for students interested in conservation of historic textiles or textile science.
- a four year B.Sc. program in Nutrition and Food Sciences with specializations in food science technology, foods and nutrition, or nutrition. The entrance requirement is an average of at least 70 per cent in English 30, Math 30, Biology 30, Chemistry 30 and one other approved Grade 12 subject (Physics 30 recommended).

Career and Technology Studies teachers in schools must have a Bachelor of Education (B.Ed.) degree. They may take a B.Ed. degree program with a specialization in human ecology or a combined B.Sc. (Human Ecology)/B.Ed. degree program, or complete a Bachelor of Education (After Degree) program after completing a B.Sc. degree in Human Ecology or Nutrition and Food Sciences. For more information, see the Career and Technology Studies Teacher occupational profile.

Post-secondary institutions throughout the province offer university transfer programs that allow students to apply up to two years of study toward university bachelor degree programs. It is the student's responsibility to ensure that the courses they choose to take will be accepted for credit at the institution to which they wish to transfer.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Other Requirements

Professional Home Economist and Professional Human Ecologist are protected titles under Alberta's Professional and Occupational Associations Registration Act and Human Ecologist and Home Economist Regulation. This means that to call yourself a Professional Home Economist or Professional Human Ecologist, you must be a registered member of the Alberta Human Ecology and Home Economics Association (AHEA). You do **not** have to be registered if you do not call yourself a Professional Home Economist or Professional Human Ecologist.

Employment and Advancement

Human ecologists may be employed by or work on a contract basis for:

- consulting firms
- community, government or non-governmental agencies
- utility companies
- food manufacturers or retailers
- home design firms
- apparel/fashion manufacturers or retailers
- not-for-profit service agencies
- international aid and development agencies.

Human ecologists may move into a wide variety of occupations (see Related Occupational Profiles below). With additional training or experience, they may become dietitians in hospitals or food service institutions (for more information, see the Dietitian occupational profile), textile conservators or museum curators (see the Conservator and Curator occupational profiles), or teach in junior and senior high schools, technical institutes or universities. Research positions generally require a post-graduate (master's or doctoral) degree.

Human ecologists are part of a larger health and social policy researchers occupational group. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Public Administration**
- **Health Care and Social Assistance**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 1,600 Albertans are employed in the Social Policy Researchers, Consultants and Program Officers occupational group which is expected to grow 0.6 to 1.6 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover. (**Note**: Since human ecologists form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for human ecologists.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Social Policy Researchers, Consultants and Program Officers occupational group working part-time or full-time earned from **$20,800 to $86,800 a year.** The average salary was **$54,100 a year.**

Other Sources of Information

Post-secondary institution calendar or website (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Human Ecology and Home Economics Association website: www.ahea.ab.ca

Related Occupational Profiles

Aboriginal Liaison
Addictions Counsellor
Career and Technology Studies Teacher
Career Development Professional
Child and Youth Care Worker
Conservator
Costume Designer
Craftsperson
Fashion Designer
Fundraiser
Interior Decorator
Life Skills Coach
Market Research Analyst
Public Relations Representative
Purchasing Agent
Recreation Co-ordinator/Supervisor
Retail Store Manager
Special Event Co-ordinator
Volunteer Manager

Related High School Subjects

Communication Technology; Design Studies; Fashion Studies; Financial Management; Fine Arts (Visual Arts); Foods; Language Arts; Management and Marketing; Mathematics; and Science (Biology; Chemistry; and Physics)

Related Post-Secondary Fields of Study

Human Ecology, Fashion and Food Sciences

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Human Resources Professional

Produced OCTOBER 2005

Human resources professionals facilitate the effective use of human resources to achieve organizational goals and objectives. They advise all levels of their organizations regarding people management, develop employee recruitment and retention programs, assist in the selection of job candidates, facilitate employee professional development, and develop and administer other human resource programs.

NOC Number(s): 1223
Minimum Education: 2 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: S M d

Duties

In general, human resources professionals:

- work with managers and staff to develop human resources strategies and programs that address the organization's needs and strategic plans
- develop and implement recruitment and retention programs that identify potential labour markets, attract potential employees and retain current employees
- develop and implement succession planning initiatives to facilitate knowledge transfer before employees retire
- work with occupational health and safety personnel to develop and implement employee wellness and workplace safety programs
- prepare and evaluate position descriptions, interview applicants and conduct reference checks
- provide advice regarding employee relations issues
- arrange for and, in some cases, deliver training programs for employees
- ensure compliance with employment legislation
- administer employment policies and programs (e.g. performance management and employee recognition programs)
- evaluate collective agreements and employee benefit plans (e.g. group life insurance, sickness and accident benefits, health insurance, holidays and retirement pension plans) and supervise staff who administer benefit and reward programs
- assist with labour relations and in preparing, researching and negotiating collective agreements
- use and oversee the management of human resource information systems.

In larger organizations, human resources professionals may specialize in:

- **recruitment and selection** - advertising vacant positions, screening applications, ensuring that all applicants are evaluated on the basis of their qualifications and that recruitment standards are fair, selecting or helping to select the best qualified applicants, conducting reference checks and preparing employment contracts.
- **labour relations** - negotiating and interpreting collective agreements.
- **classification** - establishing positions that fit organizational requirements, evaluating and allocating positions, and conducting reviews to ensure consistency with others in the industry.
- **compensation** - ensuring that wages and salaries are set according to established job specifications and classifications.
- **training and development** - conducting and responding to market surveys, identifying and providing (or arranging for) ways to improve employee competence and versatility.
- **performance management** - defining performance standards consistent with the organization's mission, culture, environment, strategy and structure.
- **employee benefits administration** - co-ordinating employee benefit plans related to life, medical, dental or disability insurance.

- **human resource planning** - forecasting the organization's human resource needs and helping management develop human resource policies and procedures.

In a small business, one general manager may be responsible for all personnel work and may have other responsibilities as well.

Working Conditions

Human resource professionals may work primarily in an office environment or in commercial or industrial environments. They generally work standard weekday office hours although some flexibility in hours may be required. Travel requirements depend on the size and nature of the organization.

Personal Characteristics

Human resources professionals need the following characteristics:

- good analytical and problem solving skills
- integrity and good judgement
- sensitivity and the ability to keep employee information confidential
- the ability to communicate well with people in person and in writing
- tact and diplomacy
- strong interpersonal skills
- the ability to understand a variety of viewpoints
- leadership ability
- good organization and time management skills
- the ability to earn the trust and co-operation of managers, unions and employees.

They should enjoy coaching and counselling managers and employees, taking a methodical approach to their work, and taking responsibility for projects.

Educational Requirements

Most employers prefer to hire human resources professionals who have a degree or diploma in a field related to human resource management (e.g. business administration, commerce, industrial relations or a related social science).

Suitable post-secondary education programs are offered by universities, colleges and technical institutes throughout Alberta. The following institutions offer programs specifically in human resources:

- **Athabasca University**, a distance learning institution, offers a three year bachelor degree (90 credits) and a one year certificate (30 credits) in Human Resources and Labour Relations. Applicants must be at least 16 years of age. A high school diploma is not required.
- **Bow Valley College** offers a part-time 100 hour Human Resources certificate program.
- **Grant MacEwan College** in Edmonton offers a two year Human Resource Management diploma program. The entrance requirement is a high school diploma with English Language Arts 30-1 or English 30 (or 75 per cent in ELA 30-2 or English 33) and Pure Math 30 or Math 30 (or 65 per cent in Applied Math 30 or Math 33), or equivalent. Certificate and diploma programs are available part-time.
- **Keyano College** in Fort McMurray offers a part-time Human Resources certificate program. The entrance requirement is a high school diploma with at least 60 per cent in ELA 30-1 or English 30 (or 65 per cent in ELA 30-2 or English 33) and Pure Math 30 or Math 30 (or 65 per cent in Applied Math 30 or Math 33), or equivalent.
- **Lakeland College** offers a one year Human Resource Management certificate program in Vermilion and Lloydminster. The entrance requirement is a high school diploma with ELA 30-1 or English 30 (or 65 per cent in ELA 30-2 or English 33) and at least 55 per cent in Pure Math 30 or Math 30 (or 65 per cent in Applied Math 30 or Math 33), or equivalent.
- **Mount Royal College** in Calgary offers:
    - a one year Business Administration certificate program with a specialization in Human Resources. This program is intended for working adults who wish to improve their business knowledge.
    - a two year Business Administration diploma program with a specialization in Human Resources. The entrance requirement is a high school diploma with at least 60 per cent in ELA 30-2 (or English 30), Pure or Applied Math 30 and three other appropriate Grade 12 subjects, or equivalent.
    - a 150 hour Human Resources Management program through Continuing Education. Applicants must be at least 18 years of age.

- The **University of Alberta** in Edmonton offers
  - four year and five year (co-op) Bachelor of Commerce degree programs with a specialization in Human Resource Management. The entrance requirement is one pre-professional year in a Bachelor of Arts or Science program with specific courses. In general, the entrance requirement for BA and B.Sc. programs is a competitive average in ELA 30-1 (or English 30), Pure Math 30 (or Math 30) and three other appropriate 30 level subjects.
  - an eight course Human Resource Management part-time certificate program through the Faculty of Extension. The entrance requirement is a high school diploma or equivalent.
- The **University of Calgary** offers
  - four year and five year (co-op) Bachelor of Commerce degree programs with a specialization in Human Resources and Organizational Dynamics. The entrance requirement is a high school diploma or equivalent with an average of at least 70 per cent in ELA 30-1 (or English 30), Pure Math 30 (or Math 30) and three of the following: Math 31, Social Studies 30, Biology 30, Chemistry 30, Physics 30, Science 30, a 30 level language other than English, one five credit Grade 12 subject.
  - a 300 hour Human Resource Management certificate program through the Faculty of Continuing Education (online or non-distance delivery). The entrance requirement is a high school diploma or over 23 years of age, and suitable business experience.
- The **University of Lethbridge** offers a ten course certificate program, four year Bachelor of Management and five year combined degree programs, and post-diploma and degree programs in Human Resource Management and Labour Relations. The entrance requirement for the degree program is a high school diploma with an average of at least 65 per cent in ELA 30-1 (or English 30), Pure Math 30 or Math 30 (or Applied Math 30 and at least 75 per cent in the University of Athabasca's Math 101), two other appropriate 30 level subjects and a fifth Grade 12 subject. The post-diploma degree program is designed for business administration diploma program graduates.

Post-secondary institutions throughout the province may offer other programs and courses related to specific aspects of human resource management (e.g. career development, conflict resolution, negotiation, project management, recruitment practices, workplace learning).

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Other Requirements

The Human Resources Institute of Alberta offers the Certified Human Resources Professional (CHRP) designation to applicants who successfully complete two examinations. University graduates must have one year of recognized professional human resource experience gained in the three year period prior to application. Diploma graduates must have three years of recognized experience in the preceding five years.

Employment and Advancement

(section revised JANUARY 2006)

Human resources professionals are employed in:

- educational institutions
- federal, provincial and municipal governments
- large businesses
- manufacturing firms
- health care institutions
- financial institutions.

Some human resources professionals are self-employed consultants.

Experienced human resources professionals may move into supervisory and management positions.

Human resources professionals are part of the larger National Occupational Classification 1223: Personnel and Recruitment Officers. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Management, Administrative and Other Support Services**
- **Public Administration**
- **Health Care and Social Assistance**

- **Professional and Technical Services**
- **Educational Services**
- **Other Manufacturing**
- **Repair, Maintenance, Personal and Other Services**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 1,600 Albertans are employed in the Personnel and Recruitment Officers occupational group which is expected to grow 1.5 to 2.5 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 20 to 40 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since human resources professionals form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for human resources professionals.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Personnel and Recruitment Officers occupational group working part-time or full-time earned from **$26,800 to $108,500 a year.** The average salary was **$61,100 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Canadian Council of Human Resources Associations website: www.chrpcanada.com

Central Alberta Human Resources Association website: www.cahrma.ab.ca

Human Resources Association of Calgary website: www.hrac.org

Human Resources Institute of Alberta website: www.hria.ab.ca

Human Resources Management Association of Edmonton website: www.hrmae.ab.ca

Related Occupational Profiles

Canadian Forces Personnel - Commissioned Officer
Career Development Professional
Industrial Engineer
Industrial Engineering Technologist
Management Consultant
Occupational Health and Safety Inspector
Retail Store Manager
School Business Official
Volunteer Manager

Related High School Subjects

Enterprise and Innovation; Information Processing; Language Arts; Legal Studies; Management and Marketing; and Mathematics

Related Post-Secondary Fields of Study

Business, Management and Administrative Studies; Social Sciences, Law and Religious Studies; and Social, Community and Protective Services

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Hydrologist

Produced SEPTEMBER 2005

Hydrologists study the distribution and circulation of water in the atmosphere, on the earth's surface and in soil and underlying rocks.

NOC Number(s): 2113
Minimum Education: 4 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: I O D

Duties

Duties and responsibilities vary from one position to another. Hydrologists often specialize in particular fields but, in general, they:

- study the flow and storage of water in rivers, lakes, wetlands, glaciers, snowpacks and in rocks and soils
- study the transport and fate of dissolved and suspended matters in water
- conduct short-term and long-term climate assessments and study effects on water flow and storage
- study erosion and sedimentation
- assess the feasibility of developing hydroelectric power plants, irrigation systems and water supplies
- conduct risk analyses for floods and droughts
- develop water and drainage management plans
- assist in minimizing the environmental impacts of pollution, water-borne diseases, erosion and sedimentation
- study public and industrial water supply, water quality, wastewater, water base and recreation requirements, and their impacts on the wetland habitats of fish and wildlife
- conduct environmental impact assessments of resource projects on water quantity and quality
- gather geographic information system (GIS), remote sensing and other data, perform statistical analyses and develop hydrologic models
- prepare technical reports
- co-ordinate and supervise the work of technologists and technicians.

Hydrogeologists specialize in studying subsurface occurrences of water.

Working Conditions

Hydrologists may work alone or with a team of professionals, technologists and technicians. Their time is generally divided between office and field work. Hours of work can be long and field work may involve being away from home for weeks at a time. Medium lifting (up to 25 kilograms) may be routinely required.

Personal Characteristics

Hydrologists need the following characteristics:

- the ability to work with complex scientific details and perform mathematical analyses
- imagination and creativity
- excellent oral and written communication skills
- the ability to work independently and as part of a team.

They should enjoy co-ordinating information and developing innovative approaches to problems, using instruments and equipment to perform tasks requiring precision and consulting with people.

Educational Requirements

The minimum education requirement is **a four year bachelor's degree in a discipline** that has a strong hydrology component such as geography, civil engineering, environmental science, earth sciences, agriculture or forestry. A master's degree is required for some positions. Before enrolling in a bachelor's degree program, prospective hydrologists should discuss their education options with people currently working in the field.

Hydrologists who provide design input for water management infrastructure projects (e.g. dams, canals, stormwater management, pipeline or bridge crossings) must have an engineering degree and Professional Engineer status. For more information, see the Civil Engineer and Environmental Engineer occupational profiles.

Hydrologists who provide geological input must have a degree in geology and Professional Geologist status. For more information, see the Geologist occupational profile.

For information about other suitable degree programs, see the Geographer, Environmental Auditor, Meteorologist, Agrologist and Forester occupational profiles.

Entrance requirements for suitable degree programs vary from one program and institution to another but, in general, include an average of 65 to 80 per cent in English Language Arts 30-1 or English 30, Pure Math 30, Chemistry 30, and two other 30-level subjects (e.g. Physics 30, Math 31 or Social Studies 30). For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

In Alberta, the following post-secondary institutions offer master's and doctoral (PhD) degree programs in hydrology:

- the **University of Alberta** in Edmonton
- the **University of Calgary**
- the **University of Lethbridge**.

Employment and Advancement

(section revised JANUARY 2006)

Hydrologists are employed by:

- resource companies
- civil engineering and environmental consulting firms
- government departments.

Experienced hydrologists may work with Canadian consulting firms overseas or advance to water resource management positions.

Hydrologists are part of the larger National Occupational Classification 2113: Geologists, Geochemists and Geophysicists. In Alberta, most people employed in this classification work in the following industries:

- **Oil and Gas Extraction**
- **Professional and Technical Services**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

About 4,350 Albertans are employed in the Geologists, Geochemists and Geophysicists occupational group which is expected to grow 1.5 to 2.5 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 60 to 110 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since hydrologists form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for hydrologists.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Hydrologists' salaries vary considerably depending on their qualifications and the responsibilities of the position.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Geologists, Geochemists and Geophysicists occupational group working part-time or full-time earned from **$37,900 to $159,600 a year.** The average salary was **$71,700 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Association of Professional Engineers, Geologists and Geophysicists of Alberta (APEGGA) website: www.apegga.org

Related Occupational Profiles

Biologist
Civil Engineer
Environmental Engineer
Exploration Geophysicist
Forester
Geographer
Geologist
Oceanographer

Related High School Subjects

Agriculture; Energy and Mines; Forestry; Information Processing; Language Arts; Mathematics; Science (Biology; Chemistry; and Physics); and Wildlife

Related Post-Secondary Fields of Study

Agriculture and Related Technologies; Engineering, Architecture and Related Studies; Environment, Forestry and Related Studies; and Sciences

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For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Hydrometric Technician/Technologist

Produced SEPTEMBER 2005

Hydrometric technicians and technologists may work independently or provide technical support for hydrologists and related scientists and engineers.

NOC Number(s): 2212.1
Minimum Education: 2 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **O I d**

Duties

Hydrology is the study of the distribution and circulation of water in the atmosphere, on the surface of the earth and in the sub-surface of the earth.

Duties and responsibilities vary from one position to another but, in general, hydrometric technicians and technologists:

- carry out studies on snowpacks to determine the density and water content prior to melt
- measure rainfall rates and amounts
- place, operate, monitor and calibrate instruments to measure and record the rate of water flow in rivers and streams
- examine, record and interpret water quality through physical inspection, sampling, and physical, chemical and microbiological analysis
- record changing water levels in streams, reservoirs, ponds and wells
- take samples of sediment
- survey lake bottom profiles and compute water volumes in lakes and reservoirs
- process and analyze computer generated data to monitor long term changes and identify trends
- carry out land surveys to obtain cross-sectional areas and topography elevations
- co-ordinate and construct gauging stations.

Working Conditions

Hydrometric technicians often work alone, dividing their time between office work and field work. Field work requires considerable travel and may routinely require lifting up to 10 kilograms. Sometimes, heavier lifting (up to 25 kilograms) is required. Some hydrometric technicians must climb towers to install instruments and radio antennas.

Hours of work can be irregular depending on the season. For example, long hours may be required during spring break-up or flooding. Work during this time can be extremely hazardous. Working conditions can be harsh when working in extreme temperatures.

Personal Characteristics

Hydrometric technicians need the following characteristics:

- good health
- a desire to work outdoors
- a willingness to travel
- the ability to record observations accurately and in an organized manner
- the ability to communicate well in person and in writing
- the ability to work independently with little supervision
- the flexibility required to adapt to new situations and changing technology.

They should enjoy using instruments and equipment to perform tasks requiring precision, and gathering and analyzing information.

Educational Requirements

Most hydrometric technicians and technologists have **related post-secondary education** such as a certificate or diploma in biological or environmental sciences, or university courses in biology, chemistry, biochemistry or environmental science. Experience operating boats, four-wheel drive vehicles and recreational vehicles is an asset.

Post-secondary institutions throughout Alberta offer programs in biology, chemistry, biochemistry, environmental science and related disciplines. Entrance requirements for two year diploma programs in biological/environmental sciences/technology vary from one program to another but generally include a high school diploma or equivalent (or mature student status) with an average of at least 60 per cent in English Language Arts 30-1 or English 30, Biology 20 or 30, Chemistry 20 or 30 and a Grade 11 or 12 math course.

Entrance requirements for university degree programs in biology and related sciences vary from one program to another but generally include a high school diploma with an average of at least 65 per cent (up to 80 per cent for admission to some programs) in English Language Arts 30-1 or English 30, Math 30 or Pure Math 30, Biology 30, Chemistry 30 and one other appropriate Grade 12 subject (Physics 30 is required for admission to some programs). Athabasca University offers distance education programs and has an open admissions policy.

For information about mature student admission policies and entrance requirements for specific programs, please check post-secondary calendars or websites.

Employment and Advancement

(section revised JANUARY 2006)

Hydrometric technicians/technologists are employed by the following types of organizations:

- geology and engineering consulting firms
- petroleum and mining companies
- manufacturing, construction and utility companies
- government departments
- educational institutions.

At times, overseas work may be available.

Advancement opportunities depend on the size and nature of the employing organization, and the individual's education and experience.

Hydrometric technicians/technologists are part of the larger National Occupational Classification 2212: Geological and Mineral Technologists and Technicians. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Oil and Gas Extraction**
- **Professional and Technical Services**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

About 3,600 Albertans are employed in the Geological and Mineral Technologists and Technicians occupational group which is expected to grow 1.6 to 2.6 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 50 to 100 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since hydrometric technicians/technologists form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for hydrometric technicians/technologists.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Geological and Mineral Technologists and Technicians occupational group working part-time or full-time earned from **$21,300 to $117,000 a year.** The average salary was **$56,700 a year.**

Hydrometric technicians and technologists generally earn considerably less than the upper end of this range suggests.

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Society of Engineering Technologists (ASET) website: www.aset.ab.ca

Canadian Council for Human Resources in the Environment Industry (CCHREI) website: www.cchrei.ca

Canadian Environmental Certification Approvals Board (CECAB) website: www.cecab.org

Environmental Services Association of Alberta (ESAA) website: www.esaa.org

Water Survey of Canada, Environment Canada website: www.msc-smc.ec.gc.ca/wsc/

Related Occupational Profiles

Biological Technician
Biologist
Geological and Geophysical Technologist
Hazardous Waste Management Technologist
Petroleum Engineering Technologist
Pollution Control Technologist
Water and Wastewater Treatment Plant Operator

Related High School Subjects

Energy and Mines; Information Processing; Language Arts; Mathematics; Physical Education; Science (Biology; and Chemistry); and Wildlife

Related Post-Secondary Fields of Study

Engineering and Science Technologies; Environment, Forestry and Related Studies; and Sciences

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For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Illustrator

Produced JUNE 2005

Illustrators research and create drawings and pictures to visually portray their own or other people's ideas. They may create illustrations for items such as commercial packaging, games, magazines, storybooks, medical textbooks, annual reports, brochures or advertisements.

NOC Number(s): 5241.2
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: I M S

Duties

In general, illustrators:

- consult with clients, editors, writers, art directors and others to establish the nature and content of desired illustrations
- prepare preliminary drawings or sketches for approval
- estimate time lines and the cost of materials
- prepare finished artwork using the required medium (e.g. computer graphics, pen and ink, acrylic, pastel, pencil, airbrush).

Most illustrators specialize in a particular field or style of drawing:

- **Advertising illustrators** work on storyboards for commercials and create illustrations for print advertisements, labels and packaging.
- **Book illustrators** create illustrations that convey the spirit of a story and expand on it.
- **Editorial illustrators** create images that support and help communicate the main ideas of articles in newspapers and magazines.
- **Illustrators employed by television studios** create storyboards or courtroom sketches for news broadcasts.
- **Fashion illustrators** sketch models in different poses to emphasize clothing and accessories. They must be familiar with the latest trends in hair, makeup and clothing, and usually work closely with fashion designers or art directors.
- **Medical illustrators** produce realistic and schematic illustrations for medical textbooks, research centres, lectures and other medical purposes. Their illustrations show what a camera cannot (e.g. a cross-section of an organ). Sometimes, medical illustrators are required to create three-dimensional models of their work.
- **Technical illustrators** are employed in a broad range of industrial specialties. For example, they may draw enlarged views of machinery parts for operating manuals, create wildlife illustrations, or draw commercial and residential buildings from structural information provided by blueprints. They spend a lot of time researching the products or subjects they draw and often work closely with engineers or scientists.

Working Conditions

Illustrators usually work in their own homes or in studios. They may sit for long periods of time and must deal with the constant pressure of deadlines.

Personal Characteristics

In addition to the ability to draw or paint, illustrators need the following characteristics:

- the promotional skills required to successfully market their work
- the ability to pay attention to fine details and work quickly to meet deadlines
- good organizational and research skills
- flexibility in working with others' ideas
- a self-motivated and independent work style.

They should enjoy synthesizing information, finding innovative ways to present ideas, taking a methodical approach to tasks requiring precision (e.g. preparing specifications, estimating costs) and consulting with people.

Educational Requirements

Many illustrators have post-secondary training in fine art or graphic design but related post-secondary education is not required to succeed in this field. For information about related post-secondary education programs in Alberta, see the Graphic Designer and Painter/Printmaker occupational profiles. However they are acquired, computer skills and knowledge of illustration software are required.

Most successful freelance illustrators are known for their personal style. Staff or in-house artists may have to be comfortable working with a variety of visual mediums (e.g. computer graphics, acrylic, watercolour, pen, pencil, guache, inks and pastels).

Medical illustrators usually have biomedical training in addition to formal art training. The **University of Toronto** offers a two year Masters of Science degree in Biomedical Communications. For current information about the program, please check the University of Toronto calendar or website.

Technical illustrators often require specialized backgrounds in biology, engineering, architecture or other scientific areas.

Employment and Advancement

(section revised JANUARY 2006)

Most illustrators work on a freelance basis. They may work for:

- publishers (magazine, newspaper, book, web-based resources and other software)
- film studios
- advertising agencies
- graphic design studios
- government departments
- printers.

Medical illustrators work for hospitals, universities, medical schools and pharmaceutical companies.

Fashion illustrators work for:

- department and chain stores
- textile companies
- pattern houses
- garment manufacturers
- fashion designers
- advertising agencies
- newspapers and magazines.

Freelance illustrators negotiate contracts for each illustration or series of illustrations. Contracts specify fees and who will hold the copyright for the work. To obtain freelance contracts, illustrators may market their services on the Internet or in source books, or employ an agent.

Advancement generally takes the form of building a reputation and a larger client group.

Illustrators are part of the larger National Occupational Classification 5241: Graphic Designers and Illustrators. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Professional and Technical Services**
- **Information, Culture and Recreation**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation**.

About 6,950 Albertans are employed in the Graphic Designers and Illustrators occupational group which is expected to grow 1.6 to 2.6 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 110 to 180 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since illustrators form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for illustrators.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Technical or medical illustrators earn significantly higher salaries, starting at about **$40,000** per year. Freelance illustrators negotiate a flat fee for each project. Depending on the client and the reputation of the illustrator, they may negotiate an hourly rate or a set fee ranging from **$150 to $5,000 per illustration (2005 estimates)**.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Graphic Designers and Illustrators occupational group working part-time or full-time earned from **$15,800 to $92,600 a year.** The average salary was **$37,200 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

Canadian Association of Photographers and Illustrators (CAPIC) website: www.capic.org

Canadian Society of Children's Authors, Illustrators and Performers (CANSCAIP) website: www.canscaip.org

Related Occupational Profiles

Animator
Cartoonist
Graphic Designer
Painter/Printmaker

Related High School Subjects

Communication Technology; Design Studies; Financial Management; Fine Arts (Visual Arts); Language Arts; Management and Marketing; and Science

Related Post-Secondary Fields of Study

Communications; Fine Arts and Performing Arts; and Health Care and Medical Sciences

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For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Immigration Officer

Produced MAY 2003

Immigration officers examine immigration applications, visas and passports, and interview people to determine their eligibility for admission, residence or travel in Canada.

NOC Number(s): 1228.1
Minimum Education: High school diploma
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **M D S**

Duties

In general, immigration officers:

- counsel people who wish to remain in Canada
- make decisions regarding immigration applications for permanent residence, visitor extensions, study or work permits
- interpret laws and explain decisions to people seeking admission or entry to Canada
- arrest and detain or arrange for the removal of inadmissible people
- work in co-operation with other law enforcement agencies to investigate people alleged to be in Canada illegally
- defend their decisions at immigration appeals or in federal court
- administer settlement and language training programs for refugees and other newcomers to Canada
- determine re-eligibility for people claiming refugee status.

Working Conditions

Shift work is a standard requirement for immigration officers at ports of entry. At inland offices located in populated centres, they usually work standard week day office hours. Some travel and occasional overtime may be required.

Most of the people that immigration officers interview are friendly and honest but officers occasionally have to deal with individuals who are hostile or engaged in criminal activities.

Personal Characteristics

Immigration officers need the following characteristics:

- good interpersonal skills
- good communication skills, including interviewing, public speaking and writing skills
- organization and time management skills
- analytical and investigative skills
- common sense and good judgement.

Further, they must be:

- honest
- objective and fair
- co-operative, flexible and patient
- attentive to details.

They should enjoy analyzing information and having clear guidelines for their work, making decisions and dealing with people.

Educational Requirements

The minimum education required for primary inspection and secondary interviewing duties at ports of entry is a **high school diploma**. However, senior positions may require a university degree. Post-secondary education, a second language and experience in dealing with people are definite assets for those seeking employment as immigration officers.

Newly hired immigration officers are placed in a developmental program and trained on the job. After the initial training period, further training in operational and organizational skills is provided on an ongoing basis.

Employment and Advancement

(section revised JANUARY 2006)

Immigration officers are employed by the federal government. Position openings are advertised through the **Public Service Commission of Canada**.

To take advantage of career opportunities, experienced immigration officers may relocate to other locations. Promotion is on a competitive basis and therefore depends on the individual's initiative, interest, competence, employment record and current knowledge of relevant laws and regulations.

Immigration officers are part of the larger National Occupational Classification 1228: Immigration, Employment Insurance and Revenue Officers. In Alberta, people employed in this classification work in the **Public Administration** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** (especially those affecting Public Administration in general and immigration in particular)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 1,950 Albertans are employed in the Immigration, Employment Insurance and Revenue Officers occupational group which is expected to grow 1.7 to 2.7 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 30 to 60 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since immigration officers form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for immigration officers.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised SEPTEMBER 2005)

Salaries for immigration officers range from **$43,800 to $50,700 per year (2002 estimate)**.

Other Sources of Information

Citizenship and Immigration Canada website: www.cic.gc.ca

Public Service Commission of Canada website: www.psc-cfp.gc.ca

Related Occupational Profiles

Customs Inspector
Foreign Service Officer

Related High School Subjects

Language Arts; Languages (other than English); Legal Studies; and Social Studies

Related Post-Secondary Fields of Study

Business, Management and Administrative Studies; and Social, Community and Protective Services

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Industrial Designer

Produced JULY 2005

Industrial designers conceptualize and produce designs for a wide variety of products and systems (e.g. furniture, electronics, appliances, tools, automobiles, sporting goods, architectural details, signage).

NOC Number(s): 2252
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus below average occupational growth in Alberta
Interests: **I M O**

Duties

When designing products, industrial designers must consider:

- how products and product systems work
- how things can be made to work better for people
- safety and health issues
- environmental issues
- consumer preferences and marketing issues
- how ideas can best be presented to others
- what materials to use.

Industrial desginers focus on maximizing the function, value and appearance of products and product systems for the mutual benefit of the user (often the consumer) and the manufacturer.

There are many specialties within industrial design: office furnishings, residential environments, scientific instruments and exhibit systems are just a few examples. The products designed range from one-of-a-kind objects to mass-produced items such as child-proof bottle caps, safety equipment, appliances, sports and leisure products, and toys and games.

In general, the design process involves:

- consulting with clients or manufacturers to establish special market requirements for the products or systems
- analyzing the intended function and user preferences to develop product specifications
- researching production specifications, costs, properties of production materials and manufacturing methods
- preparing formal presentations and reports for client or management approval
- preparing conceptual sketches or drawings and initial prototypes
- consulting with engineering design and production staff, model makers and marketing staff.

Industrial designers work closely with other members of the development group (e.g. managers, marketing personnel, engineers, manufacturing specialists). They often are involved in activities such as new product planning and market research. Sometimes, they monitor the manufacture of their designs in a factory.

In addition to product and system design, industrial designers may provide advice regarding client image: corporate identity systems, communication systems, interior space planning and exhibit design, and advertising and packaging.

Working Conditions

Industrial designers work in offices and workshops. Long hours and weekend work may be required to meet deadlines.

Personal Characteristics

Industrial designers need the following characteristics:

- good communication skills
- problem-solving abilities, particularly the ability to conceptualize problems in new ways to find innovative yet practical solutions
- good business sense

- good project management skills
- the ability to work well with others in a multi-disciplinary environment.

They should enjoy synthesizing information and conducting research, experimenting with different ways of doing things, and performing precise tasks with tools and equipment.

Educational Requirements

Industrial design combines visual arts and technology, and requires knowledge and skills in fields such as:

- ergonomics (relating product design to human and environmental factors)
- mechanics and engineering techniques
- materials and processes
- drafting, sketching and model making (for prototypes)
- social and consumer trend analysis
- aesthetics
- marketing and basic business practices.

The computer plays an increasingly important role in all aspects of design including documentation, illustration, rendering, animation, drafting and 3-D modelling. However, it is still necessary for designers to have manual skills in drawing, drafting, model making and working with materials.

With this broad range of requirements, industrial designers may come from a variety of educational backgrounds. Many industrial designers have bachelor's degrees in industrial design, fine arts, engineering or architecture or a background in graphic design. After graduation, ongoing professional development is required to keep up to date in this field.

In Alberta, the following institutions offer programs specifically in industrial design.

- The **University of Alberta** in Edmonton offers a four year Bachelor of Design (B.Des.) degree program with a specialization in Industrial Design and Visual Communication Design. The entrance requirement is an average of at least 65 per cent in English Language Arts 30-1 (or English 30) and four of the following: Biology 30, Chemistry 30, Physics 30, Math 30 or Pure Math 30, Math 31, Science 30, Social Studies 30, a 30-level language other than English, one approved fine arts subject. Applicants must submit a portfolio of their work. The University of Alberta also offers master's degree programs in Art and Design.
- The **University of Calgary** offers a Master of Environmental Design degree program with a specialization in industrial design. The entrance requirement is a bachelor's degree from a recognized university with a grade point average of at least 3.0/4 (or equivalent) in the final two years of study.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

For information about education programs in related fields, see the appropriate occupational profiles (e.g. Architect, Civil Engineer, Graphic Designer, Illustrator).

Employment and Advancement

(section revised JANUARY 2006)

Industrial designers may be self-employed and work on a contract basis, or they may be employed full-time by manufacturers, non-profit organizations or private design firms. Many graduates of industrial design programs find jobs in major centres in Eastern Canada or outside of Canada. Some students use industrial design education as preparation for entry into architecture, design management, marketing or other aspects of business.

Industrial designers may transfer their skills to other fields such as:

- technical sales/marketing with manufacturers (for more information, see the Technical Sales Representative occupational profile)
- exhibition and trade show design and fabrication (for more information, see the Exhibit Designer occupational profile)
- information design areas such as the design of natural and historical interpretation centres.

In Alberta, over 75 per cent of people employed as industrial designers work in the following industries:

- **Professional and Technical Services**
- **Other Manufacturing**
- **Metals, Metal Fabrication and Machinery Manufacturing**
- **Wood Products Manufacturing**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 500 Albertans are employed in the Industrial Designers occupational group which is expected to grow up to 0.5 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Most industrial designers work on a contract basis for specific product and system designs, and negotiate each contract separately. Designers who have specialized skills can charge higher fees.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Industrial Designers occupational group working part-time or full-time earned from **$21,500 to $98,000 a year.** The average salary was **$46,800 a year.**

Other Sources of Information

EDinfo website: www.alis.gov.ab.ca/edinfo

Association of Canadian Industrial Designers (ACID) website: www.designcanada.org

Association of Chartered Industrial Designers of Ontario (ACIDO) website: www.acidontario.org

Industrial Designers Society of America (IDSA) website: www.idsa.org

Related Occupational Profiles

Architectural Technologist
Craftsperson
Engineering Design and Drafting Technologist
Ergonomist
Exhibit Designer
Graphic Designer
Manufacturing Engineer
Sculptor
Tool and Die Maker

Related High School Subjects

Communication Technology; Design Studies; Enterprise and Innovation; Fine Arts (Visual Arts); Information Processing; Language Arts; Mathematics; Science (Biology; Chemistry; and Physics); and Social Studies

Related Post-Secondary Fields of Study

Business, Management and Administrative Studies; Communications; Engineering and Science Technologies; Engineering, Architecture and Related Studies; Fine Arts and Performing Arts; Human Ecology, Fashion and Food Sciences; and Trades, Industrial and Related Training

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For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Industrial Engineer

Produced JUNE 2004

Industrial engineers determine the most effective ways for an organization to use its basic resources: people, machines, materials, money and time.

NOC Number(s): 2141
Minimum Education: 4 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **I O D**

Duties

Industrial engineers design, improve and implement integrated systems of human beings, materials and equipment to produce needed results efficiently. For example, they may be involved with:

- planning how systems will work
- measuring work performance
- establishing work standards and specifications
- ensuring quality standards
- analyzing cost benefits
- enhancing operations management.

Industrial engineers apply knowledge and skills from social as well as physical disciplines (e.g. mathematics, statistics, engineering, chemistry, physics, psychology and sociology) to solve problems in a wide variety of industries (e.g. education, agrifood, environment, distribution and transportation, health care, pharmaceuticals, manufacturing). They may specialize in facility layout and design, production planning, logistics systems design, or management and planning.

Facility layout and design specialists:

- evaluate proposed sites for facilities
- design new buildings or redesign existing ones, taking into account factors such as the product and people flow of the workplace (e.g. shipping and receiving requirements, packaging methods), energy consumption and employee safety
- decide where machines, equipment and offices should be located to achieve maximum production at minimum cost
- create ergonomic work stations designed to reduce worker fatigue, eliminate unnecessary work steps and increase productivity.

To evaluate proposed sites, they investigate:

- labour supplies
- transportation options for moving people, raw materials and finished goods
- fuel, power, water and utility costs and supplies
- sanitary and waste disposal systems
- fire protection
- the cost of land, buildings and taxes.

Production planning specialists:

- evaluate production systems, equipment, work methods and products
- develop operating systems which reduce costs and increase quality and production
- use computers to analyze information about existing systems and simulate new ones
- devise work methods and determine how much work each machine or employee must produce to meet production quotas
- establish methods of paying employees for the kind and amount of work they do
- plan systems to check the quality of finished products.

Logistics systems specialists are concerned with:

- the movement of materials and information from the purchasing of raw materials through to production, distribution, servicing and recycling
- preventative maintenance systems design and planning
- customer service
- inventory development
- transportation
- development of effective information systems
- market needs analysis and strategic planning.

Management and operations specialists plan work patterns, systems and procedures, and make recommendations regarding improvements. They:

- develop and set up systems to control work flow, materials flow, paperwork and quality assurance of products and services
- set costs and budget limits
- assess how well the arrangements, methods, systems and procedures are working on an ongoing basis.

Working Conditions

Because this engineering discipline is so varied in its applications, working conditions also vary. Some industrial engineers spend most of their working day observing production, asking questions and watching how work is done. Others work primarily in an office environment, writing specifications and meeting with other engineers and technologists.

Some overtime may be required to meet deadlines. Extended periods of travel may be required for international projects.

Personal Characteristics

Industrial engineers need the following characteristics:

- curiosity
- imagination
- good communication skills
- the ability to visualize the effects of change
- an interest in people and systems.

They should enjoy working on their own as well as with teams, making decisions, being creative and having variety in their work.

Educational Requirements

Undergraduate degree programs in industrial engineering are offered by:

- **University of Regina**
- **University of Manitoba** in Winnipeg
- **Ryerson University** in Toronto
- **University of Toronto**
- **University of Windsor**
- **Concordia University** in Montreal
- **Ecole Polytechnique de Montreal**
- **University of Quebec**
- **Dalhousie University** in Halifax
- **University of Moncton**.

For current information about programs and admission policies, please check post-secondary calendars or websites. Generally, the minimum admission requirement for university programs in engineering is a high school diploma with an acceptable average in specified Grade 12 subjects such as English 30, Pure Math 30 and 30-level sciences.

In Alberta, the **University of Calgary** offers an undergraduate degree program in Manufacturing Engineering that includes industrial engineering content. The admission requirement is a high school diploma with an overall average of 78 per cent in English 30, Pure Math 30, Math 31, Chemistry 30 and Physics 30.

Post-secondary institutions throughout Alberta offer university transfer programs that allow students to apply up to two years of study toward university bachelor's degree programs. It is the student's responsibility to ensure that the courses they choose to take will be accepted for credit at the institution to which they wish to transfer.

Other Requirements

(section revised OCTOBER 2004)

Under Alberta's Engineering, Geological and Geophysical Professions Act, you must be a registered member of the Association of Professional Engineers, Geologists and Geophysicists of Alberta (APEGGA) to practice as a Professional Engineer. You do **not** have to be registered if you work under the direct supervision of a Professional Engineer and do not call yourself a Professional Engineer.

Employment and Advancement

(section revised JANUARY 2006)

Industrial engineers can use their skills in almost any type of organization and are more widely distributed among industries than other engineers. They may work for:

- consulting firms
- financial institutions
- government institutions
- health care institutions
- manufacturing and industrial plants
- transportation companies
- insurance companies
- department stores.

Industrial engineers are part of the larger National Occupational Classification 2141: Industrial and Manufacturing Engineers. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Professional and Technical Services**
- **Other Manufacturing**
- **Metals, Metal Fabrication and Machinery Manufacturing**
- **Oil and Gas Extraction**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 900 Albertans are employed in the Industrial and Manufacturing Engineers occupational group which is expected to grow 1.5 to 2.5 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 10 to 30 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since industrial engineers form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for industrial engineers.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised SEPTEMBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Industrial and Manufacturing Engineers occupational group working part-time or full-time earned from **$25,700 to $113,200 a year.** The average salary was **$68,600 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Association of Professional Engineers, Geologists and Geophysicists of Alberta (APEGGA) website: www.apegga.org

Canadian Society for Industrial Engineering website: www.mie.utoronto.ca/csie

Related Occupational Profiles

Ergonomist
Human Resources Professional
Industrial Engineering Technologist
Manufacturing Engineer
Operations Manager
Operations Research Analyst

Related High School Subjects

Design Studies; Electro-Technologies; Energy and Mines; Information Processing; Language Arts; Logistics; Mathematics; and Science (Chemistry; and Physics)

Related Post-Secondary Fields of Study

Engineering, Architecture and Related Studies

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Industrial Engineering Technologist

Produced OCTOBER 2004

Industrial engineering technologists gather and analyze information about how people, machines and materials are used in organizations to ensure that products and services are delivered in the most cost effective and timely manner possible.

NOC Number(s): 2233.1
Minimum Education: 2 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **I M d**

Duties

Industrial engineering is concerned with people as well as machines and materials. This field combines engineering with management training and is primarily concerned with developing effective, organized work systems that are people-oriented and cost-conscious.

Industrial engineering technologists ensure that products are manufactured or services are provided in economical, efficient ways that meet or exceed customer expectations by:

- examining the overall production process or delivery system of the operation to determine best time study practices
- introducing statistical performance measurements to analyze and improve operations
- analyzing materials handling methods and recommending ergonomic solutions to problems, safe work practices and cost efficiencies.

Industrial engineering technologists may also:

- analyze production problems such as an inadequate supply of components, materials or personnel
- verify the consistency and reliability of product quality, taking into account such factors as time, cost and quality control standards
- design new systems and improve existing systems concerned with the production and distribution of products, services, inventory and plant maintenance
- conduct surveys and feasibility studies for locating new plants
- develop manufacturing, materials handling and process plant layouts
- develop work measurement standards and evaluation systems
- devise wage incentive systems and implement job evaluation systems
- assist in testing and implementing management information systems
- design and modify equipment
- manage productivity improvement projects.

A variety of job titles are used in this occupation including manufacturing technologist, operations management technologist, operations research technologist, production control technologist and quality assurance technologist.

Working Conditions

Industrial engineering technologists usually work regular hours in offices and research labs, and on production floors.

Because they analyze the effectiveness of work teams as well as processes, industrial engineering technologists may interact with dozens of people on a regular basis. They use computers to simulate production and service processes and for word processing and spreadsheet functions.

Personal Characteristics

Industrial engineering technologists need the following characteristics:

- an aptitude for mathematics and science

- the ability to visualize abstract concepts and relationships
- excellent communication and leadership skills
- patience
- the ability to work independently or as a team member
- a desire to be thorough and accurate.

They should enjoy working with people, data, machines, computers, instruments, details and concepts; finding innovative solutions for problems; analyzing information and being methodical and directing the work of others on a project team.

Educational Requirements

The minimum educational requirement for industrial engineering technologists is a related **two year technology diploma**. For information about directly related programs that are offered in Alberta, see the Automated Systems Technologist and Mechanical Engineering Technologist occupational profiles.

The **Southern Alberta Institute of Technology (SAIT)** in Calgary offers a Certificate of Achievement in Operations Management program through Continuing Education.

Outside of Alberta, three year Industrial Engineering Technology programs are offered by the **College of the North Atlantic** in St. John's, Newfoundland and **Mohawk College of Applied Arts and Technology** in Hamilton, Ontario.

Other Requirements

Certification with the Alberta Society of Engineering Technologists (ASET) is voluntary.

Under Alberta's Engineering, Geological and Geophysical Professions Act, Registered Professional Technologists - Engineering must be ASET members to engage in a defined scope of engineering practice as registered by the Association of Professional Engineers, Geologists and Geophysicists of Alberta (APEGGA).

Employment and Advancement

(section revised JANUARY 2006)

Industrial engineering technologists may be employed full-time or work on a contract basis for:

- consulting and industrial firms
- manufacturing and processing companies
- insurance companies
- financial institutions
- transportation companies
- hospitals
- governments.

Technologists may start as trainees doing routine work under the direction of industrial engineers or experienced industrial engineering technologists. As they acquire experience and further knowledge they are given more responsible assignments. Experienced industrial engineering technologists may become production managers or quality control supervisors.

Industrial engineering technologists are part of the larger National Occupational Classification 2233: Industrial Engineering and Manufacturing Technologists and Technicians. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Professional and Technical Services**
- **Oil and Gas Extraction**
- **Metals, Metal Fabrication and Machinery Manufacturing**
- **Other Manufacturing**
- **Construction**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 1,450 Albertans are employed in the Industrial Engineering and Manufacturing Technologists and Technicians occupational group which is expected to grow 1.6 to 2.6 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 20 to 40 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since industrial engineering technologists form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for industrial engineering technologists.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Industrial Engineering and Manufacturing Technologists and Technicians occupational group working part-time or full-time earned from **$20,800 to $83,100 a year.** The average salary was **$68,200 a year.**

For more detailed information, see ASET's Annual Salary Surveys.

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Society of Engineering Technologists (ASET) website: www.aset.ab.ca

Related Occupational Profiles

Chemical Engineering Technologist
Human Resources Professional
Industrial Engineer
Materials Engineering Technologist
Mechanical Engineering Technologist

Related High School Subjects

Design Studies; Electro-Technologies; Energy and Mines; Fabrication Studies; Information Processing; Language Arts; Logistics; Mathematics; and Science (Chemistry; and Physics)

Related Post-Secondary Fields of Study

Engineering and Science Technologies

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Information Systems Consultant

Produced JULY 2004

Information systems consultants analyze, design and develop information systems business solutions and provide advice on a wide range of information systems issues.

NOC Number(s): 2171.1
Minimum Education: 4 years post-secondary education/training
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: I M D

Duties

Information systems consultants help organizations operate as efficiently and effectively as possible by developing information technology solutions for business problems.

Many common functions in for-profit and not-for-profit organizations are supported by information systems and technology:

- business communication systems
- finance and cost management
- procurement and materials
- operations (management, manufacturing, engineering, logistics, distribution)
- customer and market management
- human resource management.

Information systems consultants help people in all parts of organizations to define their information-related requirements and develop appropriate information systems. Where appropriate, consultants assess the fit of available applications and adapt existing software for particular uses. In some situations, they may be involved in the design or restructuring of business processes supported by information systems.

There are five phases in developing an information system:

- preliminary investigation (including conducting business or technical studies, where necessary, and preparing cost/benefit analyses)
- more detailed system requirements investigation (including data and process modelling)
- system analysis and design (including evaluation of existing software)
- system development and testing
- system implementation, evaluation and maintenance.

When acting as project managers, information systems consultants oversee the work of computer programmers who write the programs or integrate system components required for an information system.

To keep up to date with new developments in the computer industry, information system consultants must spend a considerable amount of time reading and attending seminars and conferences.

For information about systems analysts who specialize in particular aspects of system design, see the Systems Security Analyst, Information Systems Quality Assurance Analyst and Systems Auditor occupational profiles.

Working Conditions

Information systems consultants usually work standard office hours in office environments. Private consultants spend much of their time in clients' offices and may travel for extended periods of time.

Evening and weekend work is sometimes required to implement new systems or meet project deadlines.

Personal Characteristics

Information systems consultants need the following characteristics:

- the ability to think logically and analytically
- the ability to pay close attention to detail
- the ability to work independently, in teams and as group facilitators
- the ability to express ideas and solutions in clear, understandable language.

They should enjoy analyzing business problems and finding innovative solutions, taking a methodical approach to work that requires precision, and taking responsibility for projects that require planning, decision-making and co-ordinating the work of others.

Educational Requirements

(section revised JULY 2005)

Information systems consultants need a combination of technical expertise and business-related training or experience. A four year university degree in computer science is a good starting point. However, few consultants are hired directly out of university, unless they have previous business experience. Most computer science graduates must first gain experience in computer programming, and acquire education or experience related to business administration or management.

Information systems consultants must continuously upgrade their knowledge to keep up with changing methods and technologies.

In Alberta, the following institutions offer four year degree programs in computer science:

- **Athabasca University** (a distance education institution)
- **DeVry Institute of Technology**, a private vocational school in Calgary
- **Grande Prairie Regional College** in Grande Prairie (collaborative degree program with Athabasca University)
- **Grant MacEwan College** in Edmonton (degree granted by the University of Lethbridge)
- **The King's University College** in Edmonton
- the **University of Alberta** in Edmonton and Camrose
- the **University of Calgary**
- the **University of Lethbridge**.

With the exception of the Athabasca and DeVry programs, the minimum admission requirement for the above programs is a high school diploma or equivalent with a specified minimum average (ranging from 60 to 80 per cent) in five appropriate Grade 12 subjects including English 30 and Pure Math 30. Math 31 and Physics 30 are recommended.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

All of the universities listed above also offer business-related degree programs.

Continuing education programs are often offered on an as needed basis.

Other Requirements

(section revised OCTOBER 2004)

Information Systems Professional is a protected title under Alberta's Professional and Occupational Associations Registration Act. This means that to call yourself an Information Systems Professional, you must be a registered member of the Canadian Information Processing Society of Alberta (CIPS Alberta). You do **not** have to be registered if you do not call yourself an Information Systems Professional.

Employment and Advancement

(section revised JANUARY 2006)

Many organizations employ information systems consultants to provide consulting services for the whole organization. Private information systems consultants are hired on a contract basis for specific projects (see the Management Consultant profile).

Many information systems consultants start off as computer programmers and, with experience and additional training, move into information systems management. Further advancement opportunities depend on the size and nature of the organization, and the consultant's qualifications.

Information systems consultants are part of a larger computer systems analysts occupational group. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Professional and Technical Services**
- **Public Administration**
- **Finance, Insurance and Real Estate**
- **Oil and Gas Extraction**
- **Information, Culture and Recreation**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 16,050 Albertans are employed in the Information Systems Analyst and Consultants occupational group which is expected to grow 2.2 to 3.2 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 350 to 520 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since information systems consultants form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for information systems consultants.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised SEPTEMBER 2005)

Income figures for information system consultants vary, depending on their responsibilities, education and experience.

According to the **2005 Alberta Wage and Salary Survey**, Albertans working part-time or full-time in the Information Systems Business Analysts and Consultants occupational group earned **up to $75,600 a year**. Those with three years of experience earned from **$29,700 to $56,700 a year.** The average salary was **$66,200 a year**.

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Canadian Information Processing Society (CIPS) website: www.cips.ca

Software Human Resource Council (SHRC) website: www.shrc.ca

Related Occupational Profiles

Computer Programmer
Data Administrator
Information Systems Quality Assurance Analyst
Management Consultant
Systems Auditor
Systems Security Analyst

Related High School Subjects

Financial Management; Information Processing; Language Arts; Logistics; Management and Marketing; Mathematics; and Science (Physics)

Related Post-Secondary Fields of Study

Business, Management and Administrative Studies; and Computer and Information Technology

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Information Systems Quality Assurance Analyst

Produced JULY 2004

Information systems quality assurance analysts develop and implement policies and procedures to ensure customer satisfaction, maximum performance and overall quality of software products and information systems.

NOC Number(s): 2171.3
Minimum Education: 2 years post-secondary education/training
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: I M D

Duties

Developing software and information systems involves a number of processes:

- consulting users to define what the software/system must be able to do (complex software/systems have hundreds of required capabilities)
- analyzing requirements and designing software/systems to meet those requirements
- developing, testing and implementing software/systems (and redeveloping and retesting until software/systems meet specified requirements)
- evaluating and maintaining software/systems to ensure that they meet customer requirements and specifications.

Information systems quality assurance analysts are involved in all of these stages of software/system development. At each stage, they develop and implement policies and procedures to improve the efficiency, effectiveness and overall quality of software products and information systems. For example, in the development stage, they may lead unit testing.

Duties and responsibilities vary from one job to another, but generally include:

- developing quality standards and validation techniques
- researching, developing, implementing and documenting test plans and test scripts
- evaluating automated testing tools
- making recommendations about ways to improve software/system quality.

Quality assurance analysts may test software/systems themselves, work with software/system users or work with systems testers (for more information, see the Systems Tester profile). They may also be involved in training software/system users.

Working Conditions

Information systems quality assurance analysts usually work standard office hours in office environments. Evening/weekend work may be required to meet project deadlines.

Personal Characteristics

Information systems quality assurance analysts need the following characteristics:

- the ability to think logically and analytically
- the ability to pay close attention to detail
- the ability to work well in teams and on their own
- the ability to express complex concepts in clear, understandable language.

They should enjoy analyzing problems and finding innovative solutions, and taking responsibility for projects that require planning, decision-making and co-ordinating the work of others.

Educational Requirements

(section revised JULY 2005)

Information systems quality assurance analysts need related post-secondary education and several years of computer programming or testing experience (for more information, see the Computer Programmer and Systems Tester profiles). Successful completion of an examination is required to qualify for the designation Certified Software Quality Engineer (CSQE) from the **American Society for Quality**.

There are a wide variety of degree, diploma and certificate programs related to computer science offered by universities, colleges, technical institutes and private vocational schools. For a list, see the Computer Programmer occupational profile. Prospective quality assurance analysts should talk to potential employers about required and preferred qualifications before enrolling in an education/training program.

Information systems quality assurance analysts must continuously upgrade their knowledge because computer technology is constantly changing.

Other Requirements

(section revised OCTOBER 2004)

Information Systems Professional is a protected title under Alberta's Professional and Occupational Associations Registration Act. This means that to call yourself an Information Systems Professional, you must be a registered member of the Canadian Information Processing Society of Alberta (CIPS Alberta). You do **not** have to be registered if you do not call yourself an Information Systems Professional.

Employment and Advancement

(section revised JANUARY 2006)

Information systems quality assurance analysts are employed by information technology consulting firms, and in the IT departments of large organizations in both the private and public sectors. Some quality assurance analysts are self-employed.

Many analysts start off as computer programmers or systems testers and, with experience, move into quality assurance analyst positions. Depending on the size of the organization and the analyst's qualifications, experienced quality assurance analysts may advance to supervisory positions. Those who have business experience or training may move into information systems consulting positions or establish their own consulting firms.

Information systems quality assurance analysts are part of a larger computer systems analysts occupational group. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Professional and Technical Services**
- **Public Administration**
- **Finance, Insurance and Real Estate**
- **Oil and Gas Extraction**
- **Information, Culture and Recreation**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 16,050 Albertans are employed in the Information Systems Analyst and Consultants occupational group which is expected to grow 2.2 to 3.2 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 350 to 520 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since information systems quality assurance analysts form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for information systems quality assurance analysts.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised SEPTEMBER 2005)

Income figures for information system quality assurance analysts vary, depending on their responsibilities, education and experience.

According to the **2005 Alberta Wage and Salary Survey**, Albertans with three years of experience working part-time or full-time in the Information Systems Quality Assurance Analysts occupational group earned from **$37,400 to $73,800 a year.** The average salary was **$68,500 a year**.

Other Sources of Information

American Society for Quality (ASQ) website: www.asq.org

Canadian Information Processing Society (CIPS) website: www.cips.ca

Software Human Resource Council (SHRC) website: www.shrc.ca

Related Occupational Profiles

Computer Programmer
Database Analyst
Information Systems Consultant
Interactive Media Developer
Software Engineer
Systems Auditor
Systems Security Analyst
Systems Tester
Web Designer
Webmaster

Related High School Subjects

Information Processing; Language Arts; Mathematics; and Science (Physics)

Related Post-Secondary Fields of Study

Computer and Information Technology

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Instrument Technician

Produced FEBRUARY 2006

Instrument technicians install, maintain and repair the measuring and control instruments used in industrial and commercial processing.

NOC Number(s): 2243
Minimum Education: Apprenticeship Trade
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: **O I M**

Duties

Instrument technicians work with a wide variety of pneumatic, electronic and microcomputer instruments used to measure and control variables such as pressure, flow, temperature, level, motion, force and chemical composition. In general, they:

- consult manufacturers' manuals to determine test and maintenance procedures
- use pneumatic, electrical and electronic testing devices to inspect and test instrument and system operation, and diagnose faults
- practice loss management principles
- consult with and advise process operators
- train apprentices
- repair, maintain and adjust system components or remove and replace defective parts
- do risk assessments
- calibrate and maintain components and instruments according to manufacturers' specifications
- work with engineers on basic design
- install and maintain instruments on new or existing plant equipment and processes
- interpret and use appropriate CSA, ISA and API installation standards and practices.

Working Conditions

Working conditions can change dramatically from one job to another. Instrument technicians working with manufacturing processes may be exposed to confined or high places, noisy, dusty, cold or unusually warm conditions. There may also be exposure to radiation devices and laser equipment. Instrument technicians may work regular week-day hours or in shifts. Sometimes they are on call at night and on weekends.

There is some risk of injury, particularly when processing dangerous chemicals or working with substances under pressure or at high temperatures.

Instrument technicians may be required to lift items weighing up to 25 kilograms.

Personal Characteristics

Instrument technicians need the following characteristics:

- the ability to pay careful attention to details
- good communication and reading skills
- manual dexterity
- patience
- good mathematical, scientific and mechanical abilities
- the ability to keep up to date with changes in technology.

They should enjoy problem-solving and working with little direction or supervision.

Educational Requirements

To work in Alberta, instrument technicians must be ONE of the following:

- registered apprentices
- certified journeymen
- working for an employer who is satisfied that they have the skills and knowledge expected of certified journeymen
- self-employed.

To **register** with **Alberta Apprenticeship and Industry Training**, apprentices must:

- have at least Alberta Math 20 or 23 or Pure Math 20 or Applied Math 20 and 10 credits in a high school science (or equivalent) or pass an entrance exam
- find a suitable employer who is willing to hire and train an apprentice. Most employers prefer to hire high school or post-secondary graduates who have strong backgrounds in the chemical and physical processes involved in instrumentation. Courses in math, physics and chemistry are particularly important.

The **term of apprenticeship** is four years (four 12-month periods) that include a minimum of 1,500 hours of on-the-job training and eight weeks of technical training in the first and second year and a minimum of 1,425 hours of on-the-job training and ten weeks of technical training in the third and fourth. High school students can become apprentices and gain credits toward apprenticeship training and a high school diploma at the same time through the Registered Apprenticeship Program (RAP).

Applicants who have related training or work experience may be eligible for credit or certification.

Instrument technician apprentices may attempt the Interprovincial Exam in the final period of their apprenticeship training and, if successful, are granted a Red Seal (which is recognized in most parts of Canada).

Technical training is arranged by Alberta Apprenticeship and Industry Training and is currently offered at:

- the Northern Alberta Institute of Technology (NAIT) in Edmonton and Grande Prairie
- Red Deer College
- the Southern Alberta Institute of Technology (SAIT) in Calgary.

Outside the apprenticeship program, the following post-secondary institutions offer related training:

- **Keyano College** in Fort McMurray offers a one year Industrial Instrumentation Technology transfer program. The second year is offered at SAIT. The entrance requirement is a high school diploma with English 30 or 30-1, Math 30 or Pure Math 30, Chemistry 30 and Physics 30.
- The **Northern Alberta Institute of Technology (NAIT)** in Edmonton offers a two year Instrumentation Engineering Technology diploma program. The entrance requirement is a high school diploma or equivalent with English 30 or 33, one of Physics 30, Chemistry 30 and Science 30 and Pure Math 30 or successful completion of Transitional Mathematics 101 or at least 65 per cent in Alegbra 35.
- The **Southern Alberta Institute of Technology (SAIT)** in Calgary offers a two year Instrumentation Engineering Technology diploma program. The entrance requirement is an Alberta high school diploma or equivalent with at least 55 per cent in Pure Math 30 or Math 30, English 30 or 33 or English Language Arts 30-1 or 30-2, Physics 20 and Chemistry 20 or Science 30.

Pre-employment programs for prospective apprentices and continuing education programs for journeymen may be offered on an as needed basis by the institution(s) listed above or other schools.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Other Requirements

Graduates of engineering technology programs who have two years of successful work experience in industry may apply for certification by the Alberta Society of Engineering Technologists (ASET). Members of ASET can use the designation CET (Certified Engineering Technologist) and RET (Registered Engineering Technologist).

Employment and Advancement

With industry becoming increasingly automated, instrument technicians are needed virtually anywhere there are control and metering systems. They are employed in the following industries:

- pulp and paper processing
- hydro power generation
- mining, petrochemical and natural gas
- industrial and commercial manufacturing
- industrial construction
- industrial instrument servicing.

Experienced instrument technicians may advance to supervisory positions, be employed as engineering technicians or move into company sales offices. Alberta certified journeyman instrument technicians who have the supervisory or management skills required by industry may apply for an Achievement in Business Competencies Blue Seal by contacting Alberta Apprenticeship and Industry Training.

Instrument technicians are part of the larger National Occupational Classification 2243: Industrial Instrument Technicians and Mechanics. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Oil and Gas Extraction**
- **Construction**
- **Metal Fabrication and Machinery Manufacturing**
- **Other Manufacturing**
- **Repair, Maintenance, Personal and Other Services**
- **Professional and Technical Services**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

About 3,900 Albertans are employed in the Industrial Instrument Technicians and Mechanics occupational group which is expected to grow 2.6 to 3.6 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 100 to 140 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since instrument technicians form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for instrument technicians.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Apprentice instrument technicians earn at least 55 per cent of the journeyman wage rate in their place of employment in the first year, 65 per cent in the second, 75 per cent in the third and 85 per cent in the fourth. According to the Alberta Provincial Apprenticeship Committee for this trade, journeyman wage rates vary, but generally range from **$25 to $40 an hour plus benefits** (2005 estimate).

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Industrial Instrument Technicians and Mechanics occupational group working part-time or full-time earned from **$19,300 to $103,100 a year.** The average salary was **$64,700 a year.**

Other Sources of Information

Alberta Apprenticeship and Industry Training website: www.tradesecrets.org

Post-secondary institution calendars or websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Related Occupational Profiles

Chemical Engineer
Gas Utility Operator
Gasfitter
Instrumentation Engineering Technologist
Plumber
Refrigeration and Air Conditioning Mechanic
Sprinkler Systems Installer
Steamfitter-Pipefitter

Related High School Subjects

Design Studies; Electro-Technologies; Energy and Mines; Fabrication Studies; Information Processing; Language Arts; Mathematics; Mechanics; Physical Education; and Science (Chemistry; and Physics)

Related Post-Secondary Fields of Study

Engineering and Science Technologies; and Trades, Industrial and Related Training

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For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Instrumental Musician

Produced MAY 2003

Instrumental musicians play musical instruments. They perform as soloists or with orchestras, small ensembles or popular bands before live audiences, in recording studios or in workshop situations.

NOC Number(s): 5133.1
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **O M I**

Duties

Instrumental musicians usually specialize in playing one instrument or type of instrument. They play almost every day, practicing on their own or in rehearsals with other musicians, or in live performances or recording sessions. They may be required to:

- sight read musical parts quickly and accurately during rehearsals
- play from musical scores, music charts or from memory
- improvise as they play.

To expand their musical repertoire, musicians are constantly learning new pieces. However, they may have a number of standards that they play at performances, depending on the instrumental group, the audience and the setting. They may perform in live shows such as ballets, operas, musical theatre and cabarets, providing the musical background, or appear as guest artists with orchestras and small ensembles or with popular music bands.

Popular musicians work with a variety of people: other performers, managers who handle their business affairs, booking agents, promoters, music publishers, producers, recording directors, songwriters, club owners, talk show hosts and radio announcers.

Working Conditions

Instrumental musicians work long hours. Practices and rehearsals are usually held during the day; performances are held most often in the evenings and on weekends. Musicians often must travel on tour or to wherever they can find work (clubs, taverns and concerts halls). They may have to lift and carry instruments and accessories weighing up to 10 kilograms.

Personal Characteristics

Musicians need the following characteristics:

- the discipline required to practice regularly
- the ability to creatively interpret music
- the money management skills required to deal with highly variable incomes
- good communication skills
- a co-operative nature and the ability to accept constructive criticism
- the ability to handle the pressures of performing in public.

Since musicians work in a very competitive business, it helps if they are:

- determined and confident
- dependable and flexible
- able to handle themselves well in business negotiations.

Musicians should enjoy playing musical instruments and entertaining audiences.

Educational Requirements

(section revised JANUARY 2006)

In addition to musical talent, musicians need good business skills and a working knowledge of the music and entertainment business. In particular, they need to know how to keep records, negotiate contracts, keep financially afloat and promote themselves.

Classical musicians usually start training at an early age, either on the piano or a stringed instrument. Most brass, percussion and wind instrument players begin their music studies in school in grades 5 to 7. Few musicians are self-taught. Formal music training of some kind is required to sight read music and understand music theory, harmony and improvisation.

Once students have developed a certain level of competence on an instrument, they may audition for community bands and orchestras to gain experience playing in a group with a musical director or conductor.

Formal music training is available through private lessons and through programs offered at post-secondary institutions and music conservatories (e.g. the Royal Conservatory in Toronto or the McGill Conservatory in Montreal). In Alberta, the following post-secondary institutions offer music programs:

- **Alliance University College** offers a four year BA in Music. The entrance requirement is five senior matriculation level courses including English and math with an minimum overall average of 60 per cent.
- **Banff Centre for the Arts** offers intensive workshops with world-class musicians and conductors. Applicants must submit a portfolio, project description and resume. An audition tape may be required.
- **Canadian Nazarene University College** in Calgary offers a three and four year BA in Music. The entrance requirement is a high school diploma with a minimum average of at least 60 per cent in five Grade 12 subjects including English, and math or a second language.
- **Canadian University College** in College Heights offers three year and four year degree programs in Music. The entrance requirement is a high school diploma with English 30 and at least three other 30-level courses.
- **Concordia University College of Alberta** in Edmonton offers a three year degree program in Music. The entrance requirement is an average of at least 60 per cent in English 30 and four other appropriate Grade 12 subjects.
- **Gardner College - A Centre for Christian Studies** in Camrose offers a two year Music Performance diploma program. The entrance requirement is a high school diploma or equivalent with English 30 or 33.
- **Grande Prairie Regional College** offers a two year Music Acoustic diploma program. The entrance requirement is a high school diploma with English 30, Music 30 and Grade 2 conservatory music theory (or equivalent). A placement exam and an audition are required.
- **Grant MacEwan College** in Edmonton offers a two year Music diploma program with a specialization in performance. The emphasis in this program is on jazz and commercial music. The entrance requirement is a high school diploma or equivalent.
- **Keyano College** in Fort McMurray offers one year certificate and two year diploma programs in Music. The entrance requirement is a high school diploma with English 30 or 33 and an audition.
- **The King's University College** in Edmonton offers three year and four year degree programs in Music. The entrance requirement is an average of at least 60 per cent in English 30 and four other appropriate Grade 12 subjects.
- **Mount Royal College** in Calgary offers a two year Music Performance diploma program with a specialization in orchestral instruments. The entrance requirements are a high school diploma or equivalent, performance skills equivalent to Grade 10 Conservatory, an audition and a placement test in music theory, history and keyboard.
- **Red Deer College** offers a two year Music diploma program with a specialization in performance. The entrance requirements are a high school diploma with English 30 or 33, an audition and an examination.
- **Rocky Mountain College** in Calgary offers a four year BA in Music. The entrance requirement is four matriculation level courses including English with a minimum average of 65 per cent in the four courses.
- **University of Alberta** in Edmonton offers four year degree programs and five year combined degree programs in Music. The entrance requirement is a high school diploma with an average of at least 72 per cent in English 30 and four of the following subjects: a 30-level language other than English, a second 30-level language other than English, Biology 30, Chemistry 30, Physics 30, Math 30, Pure Math 30, Math 31, Science 30, one approved Fine Arts subject. An audition, music rudiments exam and aural skills exam are required. The University of Alberta in Camrose also offers bachelor degree programs in music.
- **University of Calgary** offers a four year degree program with a specialization in performance (keyboard or orchestral instrument). The entrance requirements are a high school diploma with an average of at least 72 per cent in English 30 and four of the following subjects: Social Studies 30, Pure Math 30, Applied Math 30, Math 31, Biology 30, Chemistry 30, Physics 30, Science 30, a 30-level language other than English, Music 30 or one

five credit Grade 12 subjects. An audition and interview are also required.

- **University of Lethbridge** offers four year degree programs and five year combined degree programs with an applied specialization including studio courses and ensemble activity. The entrance requirement are an average of at least 65 per cent in English 30 and three other appropriate 30-level subjects plus a fifth Grade 12 subject, an appropriate music background and an audition.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Entering music competitions is another way of testing one's performance skills, gaining recognition and exposure, and earning money through winning scholarships and awards. For popular musicians, winning a major talent contest may provide the opportunity to produce a professional recording or music video.

As the music video business grows, it is important for musicians to know how to perform on camera. At some point in their careers, successful popular musicians usually need to produce a music video to gain wider recognition. It is also important to be computer literate because recording equipment is often digital.

Employment and Advancement

(section revised JANUARY 2006)

Instrumental musicians must audition to find work. Classical musicians who perform mostly with symphony orchestras and small ensembles audition before committees comprised of musicians and the music director. Popular musicians (e.g. jazz, rock, country and folk musicians) often send demo tapes to booking agents, bar and nightclub owners and entertainment promoters. Once musicians have established their reputations, they may be called to play at particular gigs or bookings, or to play for specific recording sessions.

The music industry is intensely competitive. Talent, versatility and flexibility in accepting work away from home are crucial for maintaining a viable career as a musician. Being able to play more than one instrument is a definite asset. Freelance and popular musicians who play in recording sessions are usually able to play a number of different styles of music. Those who are fortunate enough to sign contracts with record companies may record their own songs or cover other people's tunes. Independent recording artists may market their products and services via the Internet.

Some musicians work as accompanists for other performers or choral groups.

Classical musicians may work with:

- symphony orchestras
- wind ensembles
- chamber orchestras and music groups
- string ensembles
- brass ensembles
- recording studios
- Broadway-type shows.

When they have passed all the requirements for orchestral positions, classical musicians may be offered yearly contracts with insurance and pension benefits. Employment in an orchestra may provide little outlet for creativity, since the same music is played over and over and there is often insufficient rehearsal time.

Exceptional players may become principal players, doing more solo work and assuming responsibility for rehearsing other musicians in their sections. The lead player in the whole orchestra is a violinist called the concertmaster. Some orchestral players may become conductors, composers, orchestrators or arrangers.

Musicians playing popular music such as jazz, rock and country may work:

- in nightclubs, lounges and dance halls
- as session players for other artists
- on cruise ships and in resort hotels
- for private parties and benefits
- in recording studios
- at music festivals
- on tour in concert halls or large stadiums.

Freelance or popular musicians must constantly improve their techniques, creating new possibilities. Popular musicians must be extremely flexible in their hours of work, places of employment and types of contracts.

Breaking into the music business requires dedication, talent and sometimes good luck. Developing contacts in the music business is as important as finding opportunities to perform.

Instrumental musicians are part of the larger National Occupational Classification 5133: Musicians and Singers. In Alberta, most people employed in this classification work in the following industries:

- **Educational Services**
- **Information, Culture and Recreation**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

About 3,950 Albertans are employed in the Musicians and Singers occupational group which is expected to grow 1.2 to 2.2 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 40 to 90 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since musicians form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for musicians.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Many musicians are members of the American Federation of Musicians of the United States and Canada. This association sets minimum wage guidelines, with different fee schedules for different settings. For example, musicians playing as sidemen with top recording artists earn substantially more than members of small rock bands playing in hotel bars.

Many musicians must work at other part-time jobs to supplement their income. Some work in music-related jobs such as arranging, artist management, composing and song writing. Teaching music, either independently or in affiliation with an institution or organization, is the way most Alberta musicians supplement their incomes.

According to the **2005 Alberta Wage and Salary Survey**, Albertans working part-time or full-time in the Musicians and Singers occupational group earned **up to $47,500 a year.** Those with three years of experience earned from **$16,500 to $39,700.** The average salary was **$33,000 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Recording Industry Association website: www.aria.ab.ca

Calgary Musicians Association website: www.calgarymusicians.org

Cultural Human Resources Council website: www.culturalhrc.ca

Edmonton Musicians Association website: www.afm.org/390/

Related Occupational Profiles

Composer
Music Copyist
Orchestra/Band Conductor
Orchestrator/Arranger
Singer

Related High School Subjects

Financial Management; Fine Arts (Music); and Language Arts

Related Post-Secondary Fields of Study

Fine Arts and Performing Arts

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Instrumentation Engineering Technologist

Produced NOVEMBER 2003

Instrumentation engineering technologists apply their knowledge of pneumatic, electronic and microcomputer measurement and control systems in business, engineering and industry settings.

NOC Number(s): 2232.1, 2241.1
Minimum Education: 2 years post-secondary education/training
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: **O I M; O I M**

Duties

Pneumatic, electronic and microcomputer instruments are used to measure and control pressure, flow, temperature, level, chemical composition and other variables in industrial processes. Instruments range in complexity from simple mechanical float level controls to complex computer-based systems.

Duties and responsibilities vary from one position to another in this emerging occupation. Instrumentation engineering technologists may:

- work in engineering offices with engineers and others to design, specify, size and select measurement and control systems
- install, operate, maintain, trouble-shoot and repair pneumatic, electronic and microcomputer-based equipment in industrial plant and field environments
- recommend and implement modifications to improve measurement and control systems
- program and configure microprocessor-based measurement and control systems
- work for vendors in technical sales and service roles (for more information, see the Technical Sales Representative occupational profile).

Working Conditions

Instrumentation engineering technologists may be employed in design, maintenance or construction environments. Those in design work primarily indoors. Those in maintenance and constuction may work outdoors at processing facilities or construction sites. They may work standard weekday hours or shifts, be on call or required to work overtime to meet project deadlines or trouble-shoot problems.

Personal Characteristics

Instrumentation engineering technologists need the following characteristics:

- an interest in and aptitude for math, chemistry and physics
- the ability to visualize three-dimensional objects from two-dimensional drawings
- persistence
- good communication skills
- the interpersonal skills required to work in a team environment.

They should enjoy doing precise work, obtaining and analyzing test results, finding innovative solutions to problems and taking a methodical approach to their work.

Educational Requirements

(Section revised MAY 2005)

The minimum educational requirement for instrumentation engineering technologists is a related **two-year engineering technology diploma**.

In Alberta, the following post-secondary institutions offer directly related programs:

- The **Northern Alberta Institute of Technology (NAIT)** in Edmonton offers a two year Instrumentation Engineering Technology diploma program. The entrance requirement is a high school diploma or equivalent with English 30 or 33, one of Physics 30, Chemistry 30 and Science 30 and Pure Math 30 or successful completion of Transitional Mathematics 101 or at least 65 per cent in Alegbra 35.
- The **Southern Alberta Institute of Technology (SAIT)** in Calgary offers a two year Instrumentation Engineering Technology diploma program. The entrance requirement is an Alberta high school diploma or equivalent with at least 55 per cent in Pure Math 30 or Math 30, English 30 or 33 or English Language Arts 30-1 or 30-2, Physics 20 and Chemistry 20 or Science 30.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Instrumentation engineering technologists who wish to become certified instrument technicians must complete the Instrument Technician apprenticeship program. NAIT and SAIT program graduates qualify for 600 hours of work experience credit toward the first and second periods of apprenticeship and may challenge third and fourth period exams. For more information, see the Instrument Technician occupational profile.

Other Requirements

(section revised OCTOBER 2004)

Certification with the Alberta Society of Engineering Technologists (ASET) is voluntary.

Under Alberta's Engineering, Geological and Geophysical Professions Act, Registered Professional Technologists - Engineering must be ASET members to engage in a defined scope of engineering practice as registered by the Association of Professional Engineers, Geologists and Geophysicists of Alberta (APEGGA).

Employment and Advancement

(section revised JANUARY 2006)

Instrumentation engineering technologists are employed by:

- engineering firms
- oil, gas and petrochemical companies
- pulp and paper mills
- food processors
- chemical plants
- mining companies
- meter and controls design and sales companies.

Many instrumentation engineering technologists are employed in technical sales and service positions. For more information, see the Technical Sales Representative occupational profile.

Experienced technologists may advance to supervisory or managerial positions or move into self-employment in consulting or other service businesses.

In Alberta, instrumentation engineering technologists are part of two larger National Occupational Classifications: 2232 Mechanical Engineering Technologists and Technicians and National Occupational Classification 2241 Electrical and Electronics Engineering Technologists and Technicians.

Over 75 per cent of people employed in the Mechanical Engineering Technologists and Technicians classification work in the following industries:

- **Professional and Technical Services**
- **Oil and Gas Extraction**
- **Metals, Metal Fabrication and Machinery Manufacturing**
- **Construction**.

Over 75 per cent of people employed in the Electrical and Electronics Engineering Technologists and Technicians classification work in the following industries:

- **Professional and Technical Services**
- **Information, Culture and Recreation**
- **Other Manufacturing**

- **Oil and Gas Extraction**
- **Public Administration**
- **Educational Services**
- **Management, Administrative and Other Support Services**
- **Construction**.

The employment outlook in these occupational groups will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 1,750 Albertans are employed in the Mechanical Engineering Technologists and Technicians occupational group which is expected to grow 2.2 to 3.2 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 30 to 60 **new** positions will be created each year **in addition** to job openings created by employment turnover.

Over 6,500 Albertans are employed in the Electrical and Electronics Engineering Technologists and Technicians occupational group which is expected to grow 2.4 to 3.4 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 150 to 230 **new** positions will be created each year **in addition** to job openings created by employment turnover.

(**Note**: Since instrumentation engineering technologists form only a part of the larger occupational groups on which these forecasts are based, only a portion of the new positions created will be for instrumentation engineering technologists.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Salaries for instrumentation engineering technologists vary considerably.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the:

- Mechanical Engineering Technologists and Technicians occupational group working part-time or full-time earned from **$24,400 to $100,500 a year.** The average salary was **$67,000 a year.**
- Electrical and Electronics Engineering Technologists occupational group working part-time or full-time earned from **$22,100 to $126,100 a year.** The average salary was **$74,400 a year.**

For more detailed information, see ASET's Annual Salary Surveys.

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Apprenticeship and Industry Training website: www.tradesecrets.org

Alberta Society of Engineering Technologists (ASET) website: www.aset.ab.ca

The Instrumentation, Systems, and Automation Society (ISA) website: www.isa.org

Related Occupational Profiles

Chemical Engineer
Gas Utility Operator
Instrument Technician
Technical Sales Representative
Telecommunications Engineering Technologist

Related High School Subjects

Design Studies; Electro-Technologies; Energy and Mines; Fabrication Studies; Information Processing; Language Arts; Mathematics; Mechanics; and Science (Chemistry; and Physics)

Related Post-Secondary Fields of Study

Engineering and Science Technologies

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Insulator

Apprenticeship and Industry Training

Produced FEBRUARY 2006

Insulators apply, remove and repair thermal and acoustical insulation (e.g. calcium silicate, glass foam, mineral wool, styrofoam, fibreglass) on all types of industrial equipment (e.g. duct piping, heat exchangers, tanks, vessels).

NOC Number(s): 7293
Minimum Education: Apprenticeship Trade - Grade 9
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: **M O i**

Duties

Duties vary from one position to another but, in general, insulators:

- read and interpret drawings and specifications to determine insulation requirements
- select the amount and type of insulation to be installed and a method of securing the insulation (e.g. spraying, pinwelding, wiring, pasting, strapping, taping) depending on the type and shape of surface, whether or not the equipment is cold or hot, inside or outside and how the equipment will be used
- measure and cut insulating material and coverings to the required shape and dimension
- fit insulation around obstructions or shape insulation materials and protective coverings
- install vapour barriers and finish insulated surfaces by applying metal cladding, canvas, plastic sheeting or cement
- remove or seal off old asbestos insulation.

Working Conditions

Insulators work both indoors and outdoors, often in uncomfortable or potentially hazardous circumstances: in very hot or cold settings, on ladders or scaffolding, in cramped areas or with materials that are dusty, itchy or toxic. They must observe safety precautions and use equipment such as respirators, coveralls and safety glasses or goggles. Insulators may work a 40-hour, five-day week or work 40 hours in four days. Some overtime may be required to meet construction deadlines. Those employed in the maintenance of industrial plants may work shifts.

Insulators may be required to lift items weighing up to 25 kilograms.

Personal Characteristics

Insulators need the following characteristics:

- manual dexterity
- the agility required to work in cramped spaces
- the ability to work in high places
- the ability to work in hot and cold environments.

They should enjoy doing precision work.

Educational Requirements

To work in Alberta, insulators must be ONE of the following:

- registered apprentices
- certified journeymen
- working for an employer who is satisfied that they have the skills and knowledge expected of certified journeymen
- self-employed.

To **register** with **Alberta Apprenticeship and Industry Training**, apprentices must:

- have at least an Alberta Grade 9 education (or equivalent) or pass an entrance exam
- find a suitable employer who is willing to hire and train an apprentice. Most employers prefer to hire high school graduates and may select apprentices from among their current employees.

The **term of apprenticeship** is four years (four 12-month periods) that include a minimum of 1,375 hours of on-the-job training and six weeks of technical training in the first and second year, a minimum of 1,300 hours of on-the-job training and eight weeks of technical training in the third and a minimum of 1,600 hours of on-the-job training in the fourth. High school students can become apprentices and gain credits toward apprenticeship training and a high school diploma at the same time through the Registered Apprenticeship Program (RAP).

Applicants who have related training or work experience may be eligible for credit or certification.

Insulator apprentices may attempt the Interprovincial Exam in the final period of their apprenticeship training and, if successful, are granted a Red Seal (which is recognized in most parts of Canada).

Technical training is arranged by Alberta Apprenticeship and Industry Training and is currently offered at Northern Alberta Institute of Technology (NAIT) in Edmonton.

Pre-employment programs for prospective apprentices and continuing education programs for journeymen may be offered on an as needed basis by the institution(s) listed above or other schools.

Employment and Advancement

Insulators are employed by construction companies, insulation contractors and industrial plants. This occupation is subject to business cycle swings that can lead to periodic high levels of unemployment.

Insulators may advance to supervisory positions such as foreman, general foreman or superintendent, or advance to estimator positions. Alberta certified journeyman insulators who have the supervisory or management skills required by industry may apply for an Achievement in Business Competencies Blue Seal by contacting Alberta Apprenticeship and Industry Training.

In Alberta, over 75 per cent of people employed as insulators work in the **Construction** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Construction industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 2,000 Albertans are employed in the Insulators occupational group which is expected to grow 2.2 to 3.2 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 40 to 70 **new** positions will be created each year **in addition** to job openings created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Apprentice insulators earn at least 50 per cent of the journeyman wage rate in their place of employment in the first year, 60 per cent in the second, 70 per cent in the third and 80 per cent in the fourth. According to the Alberta Provincial Apprenticeship Committee for this trade, journeyman wage rates vary, but generally range from **$17 to $24 an hour plus benefits** (2004 estimate).

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Insulators occupational group working part-time or full-time earned from **$22,400 to $78,900 a year.** The average salary was **$53,500 a year.**

Other Sources of Information

Alberta Apprenticeship and Industry Training website: www.tradesecrets.org

Alberta Construction Industry "Trade Up!" website: www.careersconstruction.com

Calgary Construction Association website: www.cca.cc

Construction Sector Council website: www.csc-ca.org

Related Occupational Profiles

Floorcovering Installer
Glazier
Lather-Interior Systems Mechanic
Painter and Decorator
Roofer

Related High School Subjects

Construction Technologies; and Physical Education

Related Post-Secondary Fields of Study

Trades, Industrial and Related Training

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Insurance Adjuster

Produced NOVEMBER 2005

Insurance adjusters investigate insurance claims, make recommendations regarding the payment of benefits from insurance policies, and negotiate payments and settlements.

NOC Number(s): 1233.1
Minimum Education: High school diploma
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **M S d**

Duties

Insurance claims may be the result of events such as auto accidents, fires, explosions, industrial accidents, burglaries, product defects, embezzlement, professional errors or aircraft mishaps. In general, adjusters:

- investigate the causes and origins of an insurance claim
- determine whether the event giving rise to the claim is covered by the insured person's policy
- obtain evidence that there has been, in fact, a loss covered by the policy.

When insurance claims are presented, adjusters:

- determine whether or not the policy holder is responsible (e.g. for an accident)
- obtain evidence that the amount being claimed is proper
- negotiate settlements
- advise the parties involved.

Determining and documenting the validity of a claim often involves interviewing or corresponding with policy holders, claimants and witnesses. It also involves obtaining statements and copies of documents from police officers, medical personnel and others who have specialized expertise.

Insurance adjusters employed by insurance companies are called staff or company adjusters; those who work on a fee basis are called independent adjusters. Independent adjusters may be self-employed or work for an independent adjusting firm.

Working Conditions

Experienced adjusters work alone most of the time. While they are training, they work under close supervision. They may work primarily in an office environment writing reports and making phone calls, or often work away from the office interviewing people and gathering evidence. Depending on the nature of the claims they handle, adjusters may have to do a significant amount of travelling to inspect damage and interview claimants, witnesses and police officers. Having to defend their decisions in mediation, settlement conferences and mini-trials can be stressful.

Evening and weekend work is sometimes required. Adjusters may be on call after regular office hours.

Personal Characteristics

Insurance adjusters need the following characteristics:

- the ability to remain calm and impartial when they are dealing with people who may be excited or under extreme stress
- the ability to put claimants at ease
- the ability to work on several projects at the same time
- strong organizational skills.

They should enjoy analyzing information and taking a methodical approach to their work, negotiating with people and making decisions.

Educational Requirements

Insurance adjusters need a combination of related education and on the job experience.

Employers prefer to hire people who have at least a high school diploma. Some post-secondary education is a definite asset. Adjusters who do out-of-the-office investigations need a driver's license.

The following courses are normally taken by people already employed in the insurance field:

- The **Insurance Institute of Canada** (IIC) offers a ten course distance education program leading to the Chartered Insurance Professional (CIP) designation. The program is also offered through evening courses at designated post-secondary institutions. CIPs may go on to complete the IIC Fellowship Program to earn a FCIP designation.
- The **Alberta Safety Council** offers one week On Scene Collision Investigation Levels I and II courses.

In Alberta, the following post-secondary institutions offer education programs related to insurance and risk management:

- **Academy of Learning**, a private vocational school in Calgary, Edmonton, High River and Red Deer, offers a 23 week Insurance Advisor program. The entrance requirement is a high school diploma or equivalent.
- **The Business Career College**, a private vocational school in Edmonton, offers a 26 week Insurance and Financial Services program. The entrance requirement is a high school diploma with Grade 12 English and Math 10 or any Grade 11 math, or equivalent.
- **Grant MacEwan College** in Edmonton offers a diploma program in Management Studies with a specialization in insurance and risk management. The program takes 13 months to complete if started in September or 15 months if started in January. Graduates of the program earn credit for nine of twelve courses toward the Insurance Institute of Canada's CIP designation. Applicants must have at least 50 per cent in English Language Arts 30-1 or English 30 (or 75 per cent in English 33) and Pure Math 30, Math 30 or Math 31 (or 65 per cent in Applied Math 30). Grant McEwan College also offers evening non-credit CIP courses.
- **Mount Royal College** in Calgary offers a two year diploma program in Business Administration and Insurance that includes two four month work terms. Graduates of the program earn advanced standing toward the Insurance Institute of Canada's CIP designation. The entrance requirement is a high school diploma with English Language Arts 30-1 and Pure or Applied Math 30, or equivalent. Mount Royal also offers a Life License Qualification Program through Continuing Education.
- The **University of Calgary** offers four year and five year (co-op) Bachelor of Commerce degree programs with a specialization in risk management and insurance. Some of the courses in the program are those required for the CIP designation but not all CIP courses are offered. The entrance requirement is a high school diploma with a competitive average in English Language Arts 30-1 or English 30, Pure Math 30 and three of the following: Math 31, Social Studies 30, Biology 30, Chemistry 30, Physics 30, Science 30, a language 30 other than English, one five credit Grade 12 subject. The University of Calgary also offers a Risk Management Certificate program through Continuing Education.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Before enrolling in an education program, prospective adjusters should discuss their training options with potential employers.

Other Requirements

In Alberta, insurance adjusters must be licensed by the Alberta Insurance Council. Applicants must meet education and work experience requirements.

Employment and Advancement

(section revised JANUARY 2006)

Some insurance adjusters begin as clerical workers or telephone adjusters in the claims departments of insurance companies or in independent adjusting firms, and gradually expand their knowledge and experience in the field.

With additional training, telephone adjusters can be promoted to claims examiner, field adjuster, supervisor or claims manager positions.

Insurance adjusters are part of the larger National Occupational Classification 1233: Insurance Adjusters and Claims Examiners. In Alberta, most people employed in this classification work in the **Finance, Insurance and Real Estate** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Finance, Insurance and Real Estate industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

About 3,150 Albertans are employed in the Insurance Adjusters and Claims Examiners occupational group which is expected to grow 1.3 to 2.3 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 40 to 80 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since insurance adjusters form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for insurance adjusters.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

According to the **2005 Alberta Wage and Salary Survey**, Albertans working part-time or full time in the Insurance Adjusters and Claims Examiners occupational group earned up to **$89,400 a year.** The average salary was **$40,100 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Insurance Council website: www.abcouncil.ab.ca

Insurance Institute of Canada website: www.iic-iac.org

Related Occupational Profiles

Customs Broker
Insurance Agent/Broker
Insurance Underwriter
Personal Property/Equipment Appraiser
Private Investigator

Related High School Subjects

Language Arts; Management and Marketing; and Mathematics

Related Post-Secondary Fields of Study

Business, Management and Administrative Studies

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Insurance Agent/Broker

Produced NOVEMBER 2005

Insurance agents and brokers assess people's financial needs and advise them on how to protect themselves against financial loss. They may sell life, property, casualty, automobile or health insurance policies to individuals, businesses or public institutions.

NOC Number(s): 6231
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **M S d**

Duties

Insurance agents represent insurance companies either as employees of a company or as independent representatives.

Insurance brokers represent their clients. They are under contract to a number of insurance companies and place policies directly with whichever company can best serve the needs of individual clients.

Insurance agents/brokers may sell various types of policies that generally fall into two broad categories: life insurance and property/casualty insurance.

- Life insurance policies provide payment to survivors (beneficiaries) when the person whose life is insured dies. A life insurance policy also can be designed to provide retirement income, educational funds for surviving children or other benefits.
- Property/casualty insurance policies including automobile policies, protect against financial loss from damage, theft or liability lawsuits. They may be personal or commercial insurance policies.

Some agents and brokers sell specialized types of insurance such as marine insurance, farm and crop insurance, or medical and dental insurance.

Agents and brokers also:

- develop clientele by generating lists of prospects (people who may need risk management information and insurance products) and visiting them to discuss their risk management and insurance needs
- inspect property to determine its general condition, type of construction, age and other characteristics to decide if it fits company underwriting standards
- build policies to suit clients' needs
- keep in touch with clients to help them keep their insurance programs up to date
- monitor insurance claims such as property damage or a death in the family
- attend meetings, seminars and programs to keep up to date and learn new skills.

Working Conditions

Hours of work vary in this occupation. Agents and brokers may work evenings and weekends prospecting clients, making calls or catching up on paperwork.

Personal Characteristics

Insurance agents and brokers need the following characteristics:

- excellent oral and written communication skills
- the ability to work independently
- good business judgement
- a genuine interest in helping people achieve their financial goals
- persuasive persistence (an enthusiastic attitude when faced with disappointing sales and clients who say no)
- a willingness to keep up to date with new information about tax laws, amendments to pension and benefit plans, and other changes

- a willingness to pay attention to the details that satisfy client needs.

They should enjoy compiling information and taking a methodical approach to their work, persuading and working with people and making decisions.

Educational Requirements

Most employers require applicants to have at least a high school diploma. However, the insurance business is very competitive and many agents and brokers have post-secondary education.

Some agents and brokers learn the basics on the job before taking the courses and examinations required for the professional designation Chartered Insurance Professional (CIP) offered by the **Insurance Institute of Canada (IIC)**. Others take related courses or post-secondary programs before they are hired. CIPs may go on to complete the Fellowship CIP Program.

The **Independent Insurance Brokers Association of Alberta (IIBAA)** and IIC offer intensive short courses that qualify graduates to become licensed insurance brokers. IIBAA also offers a four course program leading to the designation Canadian Accredited Insurance Broker (CAIB).

In Alberta, the following post-secondary institutions offer education programs related to insurance and risk management:

- **Academy of Learning**, a private vocational school in Calgary, Edmonton, High River and Red Deer, offers a 23 week Insurance Advisor program. The entrance requirement is a high school diploma or equivalent.
- **The Business Career College**, a private vocational school in Edmonton, offers a 26 week Insurance and Financial Services program. The entrance requirement is a high school diploma with Grade 12 English and Math 10 or any Grade 11 math, or equivalent.
- **Grant MacEwan College** in Edmonton offers a diploma program in Management Studies with a specialization in insurance and risk management. The program takes 13 months to complete if started in September or 15 months if started in January. Graduates of the program earn credit for nine of twelve courses toward the Insurance Institute of Canada's CIP designation. Applicants must have at least 50 per cent in English Language Arts 30-1 or English 30 (or 75 per cent in English 33) and Pure Math 30, Math 30 or Math 31 (or 65 per cent in Applied Math 30). Grant McEwan College also offers evening non-credit CIP courses.
- **Mount Royal College** in Calgary offers a two year diploma program in Business Administration and Insurance that includes two four month work terms. Graduates of the program earn advanced standing toward the Insurance Institute of Canada's CIP designation. The entrance requirement is a high school diploma with English Language Arts 30-1 and Pure or Applied Math 30, or equivalent. Mount Royal also offers a Life License Qualification Program through Continuing Education.
- The **University of Calgary** offers four year and five year (co-op) Bachelor of Commerce degree programs with a specialization in risk management and insurance. Some of the courses in the program are those required for the CIP designation but not all CIP courses are offered. The entrance requirement is a high school diploma with a competitive average in English Language Arts 30-1 or English 30, Pure Math 30 and three of the following: Math 31, Social Studies 30, Biology 30, Chemistry 30, Physics 30, Science 30, a language 30 other than English, one five credit Grade 12 subject. The University of Calgary also offers a Risk Management Certificate program through Continuing Education.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Before enrolling in an education program, prospective agents and brokers should discuss their training options with potential employers.

Other Requirements

In Alberta, insurance agents and brokers must be licensed by the Alberta Insurance Council. Applicants must meet education and work experience requirements.

Employment and Advancement

(section revised JANUARY 2006)

Insurance agents work for:

- general insurance companies

- brokerage firms
- independent insurance agencies
- financial planning firms.

Summer employment is a good way to gain practical experience. Insurance companies often interview students on college and university campuses. Or, interested individuals can set up their own appointments to discuss opportunities with local insurance company managers. Job applicants may be asked to complete screening questionnaires or attend further interviews.

Experienced, successful insurance agents and brokers may move into supervisory and management positions, or head office jobs in administration, training, underwriting, sales promotion or branch management.

In Alberta, most people employed as insurance agents and brokers work in the **Finance, Insurance and Real Estate** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Finance, Insurance and Real Estate industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 7,700 Albertans are employed in the Insurance Agents and Brokers occupational group, which is expected to grow 1.5 to 2.5 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 110 to 200 **new** positions will be created each year **in addition** to job openings created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Agents and brokers may be paid a salary, work on a commission basis or a combination of both. Their incomes vary considerably depending on the employer, the employee's abilities and educational background, the geographic area and the responsibilities of the position.

Usually, newly hired agents and brokers are paid a base salary and look after existing client accounts. To encourage finding new clients, they often receive a percentage of commissions for the new business they attract. Some agents receive commissions from day one, although most choose to receive a salary for six months or longer while they establish a client base.

Most agents and brokers pay their own car and travel expenses. If they operate their own businesses, other overhead expenses may include office rent and staff salaries.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Insurance Agents and Brokers occupational group working part-time or full-time earned from **$17,600 to $112,800 a year.** The average salary was **$41,900 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Insurance Council website: www.abcouncil.ab.ca

Independent Insurance Brokers Association of Alberta (IIBAA) website: www.iibaa.com

Insurance Institute of Canada (IIC) website: www.iic-iac.org

Related Occupational Profiles

Banking/Investment Manager
Financial Planner
Insurance Adjuster
Insurance Underwriter
Investment Advisor
Mortgage Agent
Real Estate Agent

Related High School Subjects

Enterprise and Innovation; Financial Management; Language Arts; Management and Marketing; Mathematics; and Social Studies

Related Post-Secondary Fields of Study

Business, Management and Administrative Studies

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Insurance Underwriter

Produced NOVEMBER 2005

Insurance underwriters evaluate the risks involved in applications for insurance and, on behalf of the insurance company, decide whether or not to accept those risks. They may work for life insurance companies or general insurance companies.

NOC Number(s): 1234
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **M S d**

Duties

When insurance agents and brokers sell insurance policies to individuals and organizations, they present applications for insurance to insurance company underwriters. When applications are received, underwriters:

- review applications to ensure that the requested coverage fits the risk exposure
- check details to ensure that the insurance company is receiving a premium corresponding to the risk it is taking and guard against fraudulent requests for coverage
- discuss rates, risks, regulations and coverages with agents and brokers.

Underwriters work within corporate policies, principles and rules for the acceptance of normal risks. If they decide that a risk is not acceptable, they may:

- adjust the premium or the coverage to make the risk acceptable
- propose modifications to the coverage or plan deductible
- spread the risk via subscription policies with other companies or a reinsurance company
- refuse the application for coverage.

In addition to underwriting new applications, underwriters are responsible for analyzing changes requested during the term of the policy and reviewing the risk for renewal. Depending on the company and product line, they also may check policies issued by others to ensure that guidelines are followed, coverage fits risks and rates are correct.

Insurance underwriters spend much of their time on the phone with and writing letters to insurance agents and brokers, people in other insurance company departments (e.g. claims and legal departments) and others.

Working Conditions

Insurance underwriters usually work in an office setting but may travel within a specified territory. Because agents often press for quick answers, an underwriter's job can be stressful. Most companies use computers extensively to speed up decision making and reduce paper flow.

Personal Characteristics

Insurance underwriters must be:

- analytical
- organized
- detail-oriented
- good with numbers
- inquisitive
- objective and able to make sound decisions
- able to negotiate with brokers.

They should enjoy co-ordinating information and taking a methodical approach to their work, working with people and making decisions.

Educational Requirements

Most insurance companies prefer to hire underwriting trainees who have some post-secondary education. Underwriters usually take two to five years to be become fully qualified by taking related courses and gradually taking on more responsibility. They must be able to analyze reports from other departments (e.g. claims, accounting) and keep up to date with current affairs and changes that affect their work.

Most general insurance companies encourage their underwriters to take a program of study offered by the **Insurance Institute of Canada.** The program leads to the designation Chartered Insurance Professional (CIP). Courses can be taken by correspondence or through designated post-secondary institutions.

Education and certification programs for life insurance underwriters are offered by the **Life Office Management Association (LOMA)** and **ADVOCIS The Financial Advisors Association of Canada**.

In Alberta, the following post-secondary institutions offer education programs related to insurance and risk management:

- **Academy of Learning**, a private vocational school in Calgary, Edmonton, High River and Red Deer, offers a 23 week Insurance Advisor program. The entrance requirement is a high school diploma or equivalent.
- **The Business Career College**, a private vocational school in Edmonton, offers a 26 week Insurance and Financial Services program. The entrance requirement is a high school diploma with Grade 12 English and Math 10 or any Grade 11 math, or equivalent.
- **Grant MacEwan College** in Edmonton offers a diploma program in Management Studies with a specialization in insurance and risk management. The program takes 13 months to complete if started in September or 15 months if started in January. Graduates of the program earn credit for nine of twelve courses toward the Insurance Institute of Canada's CIP designation. Applicants must have at least 50 per cent in English Language Arts 30-1 or English 30 (or 75 per cent in English 33) and Pure Math 30, Math 30 or Math 31 (or 65 per cent in Applied Math 30). Grant McEwan College also offers evening non-credit CIP courses.
- **Mount Royal College** in Calgary offers a two year diploma program in Business Administration and Insurance that includes two four month work terms. Graduates of the program earn advanced standing toward the Insurance Institute of Canada's CIP designation. The entrance requirement is a high school diploma with English Language Arts 30-1 and Pure or Applied Math 30, or equivalent. Mount Royal also offers a Life License Qualification Program through Continuing Education.
- The **University of Calgary** offers four year and five year (co-op) Bachelor of Commerce degree programs with a specialization in risk management and insurance. Some of the courses in the program are those required for the CIP designation but not all CIP courses are offered. The entrance requirement is a high school diploma with a competitive average in English Language Arts 30-1 or English 30, Pure Math 30 and three of the following: Math 31, Social Studies 30, Biology 30, Chemistry 30, Physics 30, Science 30, a language 30 other than English, one five credit Grade 12 subject. The University of Calgary also offers a Risk Management Certificate program through Continuing Education.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Before enrolling in an education program, prospective underwriters should discuss their training options with potential employers.

Employment and Advancement

(section revised JANUARY 2006)

Underwriters in the field of general insurance are usually employed by local insurance companies which are usually located in larger cities. Life insurance underwriters are usually employed in company head offices.

With experience, underwriters advance to assessing more complex risks such as commercial property risks or auto fleets, and quoting premiums on risks (determining prices and conditions to offer for proposed policies).

After qualifying for the CIP designation, a general insurance underwriter may move into more advanced technical areas of underwriting, management or other departments (e.g. marketing). Some underwriters become independent insurance agents or enter the field of reinsurance or brokering. All insurance agents and independent adjusters must be licensed (for more information, see the InsuranceAdjuster and Insurance Agent/Broker occupational profiles).

In Alberta, most people employed as insurance underwriters work in the **Finance, Insurance and Real Estate** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Finance, Insurance and Real Estate industry)

- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 1,700 Albertans are employed in the Insurance Underwriters occupational group which is expected to grow 1.3 to 2.3 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 20 to 40 **new** positions will be created each year **in addition** to job openings created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Insurance Underwriters occupational group working part-time or full-time earned from **$25,100 to $89,700 a year.** The average salary was **$43,500 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

ADVOCIS The Financial Advisors Association of Canada website: www.advocis.ca

Alberta Insurance Council website: www.abcouncil.ab.ca

Canadian Securities Institute website: www.csi.ca

Insurance Institute of Canada website: www.iic-iac.org

Life Office Management Association website: www.loma.org

Related Occupational Profiles

Actuary
Customs Broker
Insurance Adjuster
Insurance Agent/Broker

Related High School Subjects

Financial Management; Language Arts; Legal Studies; Management and Marketing; Mathematics; and Science

Related Post-Secondary Fields of Study

Business, Management and Administrative Studies

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Interactive Media Developer

Produced JULY 2004

Interactive media developers are computer specialists who write, modify, integrate and test computer code for internet applications, computer-based training software, computer games, film, video and other interactive media.

NOC Number(s): 2174.2
Minimum Education: 2 years post-secondary education/training
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: I M D

Duties

Duties vary from one job to another in this rapidly evolving occupation but, in general, interactive media developers:

- program animation software for interactive CDs, DVDs, video game cartridges and internet-based applications
- program special effects software for film and video applications
- write, modify, integrate and test software code for e-commerce and other internet applications
- assist in the collection and documentation of user requirements
- assist in the development of logical and physical specifications
- research and evaluate interactive media software products.

To keep up to date with new developments, interactive media developers share information via e-mail and web-based resources, attend technical training courses and conferences and read computer-related journals, magazines and newsletters.

Working Conditions

Intervactive media developers usually work in offices equipped with sophisticated information technology. Overtime may be required to meet project deadlines.

Some travel may be required.

Personal Characteristics

Interactive media developers need the following characteristics:

- the ability to think logically and abstractly
- the ability to pay close attention to details
- the ability to work alone or as part of a team
- an active interest in keeping up with technological advances.

They should enjoy analyzing problems to find innovative solutions and taking a methodical approach to work that requires precision.

Educational Requirements

(section revised FEBRUARY 2006)

This is a new field so many people currently working as interactive media developers started in other occupations (e.g. graphic designer, software engineer, writer). There are **no standard education requirements** but most employers prefer to hire applicants who have at least two years of related post-secondary education or experience.

Interactive media developers must continuously upgrade their knowledge because computer technology is constantly changing.

There are a wide variety of degree, diploma and certificate programs related to computer science offered by universities, colleges, technical institutes and private vocational schools throughout Alberta. For a list, see the Computer Programmer occupational profile. Before enrolling in a program, prospective students should discuss their education options with experienced interactive media developers and potential employers.

The following post-secondary education institutions offer programs specifically related to multimedia development and design:

- **Academy of Learning**, a private vocational school in Edmonton South, offers a 52 week Multimedia Developer for the Internet program.
- **Alberta College of Art and Design** in Calgary offers a four year Bachelor of Fine Arts degree program in Media Arts and Digital Technologies.
- **The Banff Centre** offers a Banff New Media Institute program.
- **DevStudios**, a private vocational school in Edmonton, offers a 30 week e-Media and Design diploma program, a 36 week 3D Animation and Digital Compositing program and a 22 week Digital Audio Specialist program.
- **Grande Prairie Regional College** offers a two year Visual Arts diploma program with a specialization in interactive digital design.
- **Grant McEwan College** in Edmonton offers a two year Digital Arts and Media diploma program.
- **GURU Digital Arts College** in Edmonton offers a 24 week Digital Media Producer program.
- **Lethbridge Community College** offers a 16 month Multimedia Production diploma program.
- **Medicine Hat College** offers a three year diploma program and a four year degree program in Visual Communications with a major in digital media design.
- The **Northern Alberta Institute of Technology (NAIT)** in Edmonton offers a one year Digital and Interactive Media Design certificate program.
- **Prestwick College**, a private vocational school in Calgary offers a 26 week CIW Master Designer Plus program.
- **Red Deer College** offers a 21 week Multimedia Web Developer Certificate program.
- **Southern Alberta Institute of Technology** in Calgary offers a two year New Media Production and Design diploma program.
- **Sprott-Shaw Community College** in Calgary offers 45 week Digital Animation and Digital Media Arts programs and a part-time Computer Graphics and Web Media program.
- The **University of Alberta** in Edmonton offers a four year Bachelor of Fine Arts degree program in Visual Communications.
- The **University of Lethbridge** offers a four year Bachelor of Fine Arts degree program specializing in New Media.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Other Requirements

(section revised OCTOBER 2004)

Information Systems Professional is a protected title under Alberta's Professional and Occupational Associations Registration Act. This means that to call yourself an Information Systems Professional, you must be a registered member of the Canadian Information Processing Society of Alberta (CIPS Alberta). You do **not** have to be registered if you do not call yourself an Information Systems Professional.

Employment and Advancement

(section revised JANUARY 2006)

Interactive media developers are employed by:

- computer software development firms
- interactive software publishers
- media production companies
- information technology consulting firms.

They may also work in the information technology units of large private or public sector organizations, or be self-employed.

Experienced interactive media developers may move into related occupations such as web designer or webmaster.

Interactive media developers are part of a larger computer programmers occupational group. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Professional and Technical Services**
- **Public Administration**
- **Finance, Insurance and Real Estate**
- **Oil and Gas Extraction**
- **Information, Culture and Recreation**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

About 11,300 Albertans are employed in the Computer Programmers and Interactive Media Developers occupational group which is expected to grow 2.3 to 3.3 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 250 to 380 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since interactive media developers form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for interactive media developers.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised SEPTEMBER 2005)

Salaries for interactive media developers vary depending on the responsibilities of the position and the person's education and experience.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Interactive Media Developers occupational group working part-time or full-time earned from **$27,000 to $100,000 a year.** The average salary was **$47,100 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Canadian Information Processing Society (CIPS) website: www.cips.ca

International Game Developers Association (IGDA) website: www.igda.org

Multimediator - Canada's Multimedia Guide website: www.multimediator.com

Software Human Resource Council (SHRC) website: www.shrc.ca

Related Occupational Profiles

Animator
Computer and Network Operator
Computer Programmer
Database Analyst
Graphic Designer
Information Systems Quality Assurance Analyst
Software Engineer
Systems Tester
Web Designer
Web Technician

Related High School Subjects

Communication Technology; Fine Arts (Visual Arts); Information Processing; Language Arts; and Mathematics

Related Post-Secondary Fields of Study

Communications; and Computer and Information Technology

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Interior Decorator

Produced MARCH 2005

Interior decorators assist clients in co-ordinating the decorative aspects of interior spaces.

NOC Number(s): 6421
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **M S d**

Duties

Interior decorators decorate private residences, hotels, restaurants, schools, universities, office buildings, factories and clubs. They may decorate new spaces, re-decorate existing ones or decorate for special events such as weddings.

Many interior decorators specialize in residential interiors. They select, co-ordinate or place:

- finishes such as wallpaper, paint and floor coverings
- window treatments
- furnishings
- pictures and decorative accessories.

Duties and responsibilities vary from one position to another but, in general, interior decorators:

- consult with clients to determine colour and style preferences, needs and budgetary requirements
- submit decorating recommendations, colours and samples for approval
- select appropriate materials and colours on their own or with the client
- supervise the purchase of materials
- co-ordinate the delivery and installation of materials.

Interior decorators employed in department stores, furniture stores and other retail establishments sell the store's merchandise through the decorating service. Some decorators represent a particular manufacturer's product line.

Working Conditions

Working conditions for interior decorators vary depending on their place of employment. They may work days, evenings and weekends and spend a great deal of time in clients' homes. Hours of work can be irregular where decorators have to adapt their schedules to suit client needs.

The work may involve frequently lifting items that weight up to 10 kilograms. Heavier lifting may be required in some work settings. Decorating windows may require working from ladders to measure dimensions.

Personal Characteristics

Interior decorators need the following characteristics:

- excellent verbal and written communication skills, especially the ability to listen carefully and communicate images clearly
- good spatial perception and the ability to visualize three dimensions from two-dimensional drawings
- a keen interest in fashion and home decor
- creativity and drawing ability
- the ability to work well with all types of people
- sales ability
- patience and flexibility
- the ability to deal with the pressure of deadlines
- mathematical ability.

They should enjoy having clear rules and organized methods for their work, selling merchandise and working with a variety of materials.

Educational Requirements

(section revised MAY 2005)

To acquire the necessary skills in identifying colour, proportion, balance and detail, interior decorators may **learn on the job or take related training programs**. In general, employers prefer to hire applicants who have:

- a high school diploma
- experience or training in interior decorating and sales
- a vehicle for business use.

Some employers prefer to hire graduates of post-secondary programs in interior design or visual arts (for more information, see the Interior Designer occupational profile).

In Alberta, the following institutions offer interior decorating programs:

- **Bow Valley College** in Calgary offers an eight month Interior Decorating and Merchandising certificate program. Applicants must have at least 60 per cent in English Language Arts 20-1 or 30-2 and in a Grade 10 level math, or Grade 12 or equivalent.
- **Lakeland College** in Lloydminster and Sherwood Park offers a Residential Decorating certificate of training program through Continuing Education.
- **Mount Royal College** in Calgary offers an eight course (136 hours) Residential Decorating Extension Certificate program through the Faculty of Continuing Education and Extension. Applicants must be at least 18 years of age.
- The **University of Alberta** Faculty of Extension in Edmonton offers a 351 hour Residential Interiors certificate program. Applicants must be at least 18 years of age and have a high school diploma (or equivalent) including English 30 or equivalent.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Other Requirements

Under Alberta's Architects Act, Interior Design Regulation, the Alberta Association of Architects (AAA) oversees interior designer certification which entitles designers to practice a portion of the scope of practice defined in the Architects Act and Regulations. You do **not** have to be registered if you do not practice as or use the title Licensed Interior Designer.

Employment and Advancement

(section revised JANUARY 2006)

Interior decorators are employed by:

- department stores
- paint and wallpaper retail outlets
- furniture stores
- carpet outlets
- fabric and window covering suppliers
- construction industry suppliers (e.g. kitchens, lighting or bathroom fixtures)
- decorating services
- manufacturing firms.

Some interior decorators work on a freelance basis and purchase merchandise from retail outlets. Establishing a successful decorating service requires extensive work experience, good business skills, equipment such as a digital camera and colour printer, and sufficient funds to purchase supplies before customers pay for them.

Interior decorators are part of the much larger National Occupational Classification 6421: Retail Salespersons and Sales Clerks. In Alberta, most people employed in this classification work in the **Retail Trade** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Retail Trade industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

About 62,550 Albertans are employed in the Retail Salespersons and Sales Clerks occupational group which is expected to grow 1.3 to 2.3 per cent each year from 2005 to 2010 in Alberta. It is forecasted that over 600 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since interior decorators form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for interior decorators.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

After completing their on-the-job training, most interior decorators work on a commission basis. Incomes therefore vary greatly depending from one person to another, and from one month to another. Some decorators working on commission are required to reimburse the employer for costs when they make mistakes.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Sales Retail Salespersons and Sales Clerks occupational group working part-time or full-time earned from **$10,400 to $154,800 a year.** The average salary was **$25,900 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Related Occupational Profiles

Floral Designer
Home Economist
Human Ecologist
Interior Designer
Retail Salesperson
Visual Merchandiser

Related High School Subjects

Design Studies; Fashion Studies; Fine Arts (Visual Arts); Language Arts; Mathematics; and Physical Education

Related Post-Secondary Fields of Study

Human Ecology, Fashion and Food Sciences; and Personal and Food Services

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For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Interior Designer

Produced MARCH 2005

Interior designers create and enhance interior spaces to improve quality of life, increase productivity and protect public health, safety and welfare.

NOC Number(s): 5242
Minimum Education: 4 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **I M S**

Duties

Interior designers plan new interiors and renovate existing ones in commercial buildings (e.g. offices, institutions, stores, hotels and restaurants) and single and multi-family dwellings. Their responsibilities vary from one position or project to another but, in general, interior designers:

- identify and analyze client needs and goals, safety requirements, budget limitations and project schedules
- prepare preliminary plans and design concepts for client approval
- estimate costs
- develop presentations for client approval, including drawings, sketches, renderings, perspectives, colour and material boards, photographs or models
- prepare working drawings and specifications for nonload-bearing construction including materials, finishes, millwork and furnishings
- prepare tender documents, co-ordinate the bid process and assist clients in awarding contracts
- confirm that required building and other code permits are obtained
- collaborate with professional and technical consultants (e.g. mechanical and electrical engineers, architects, audio-visual consultants)
- conduct field reviews of construction and installation of furnishings, fixtures and equipment
- review and evaluate projects on behalf of clients, during implementation and upon completion.

Interior designers co-ordinate their work with other professionals and work closely with general contractors to ensure that their drawings are interpreted correctly. They may co-ordinate the activities of trades (e.g. painters, carpenters) when there is no general contractor.

Interior designers are concerned with general and detailed planning, spatial arrangements, health and safety issues, detailing, constructability and technical considerations (e.g. lighting and acoustics) as well as the aesthetics of a space. They are more involved with technical considerations than interior decorators are. Decorators focus on the ornamental and moveable aspects of interiors (colour, furniture, rugs, drapery) and fixed details (e.g. moldings) that can easily be added to an existing space (for more information, see the Interior Decorator occupational profile).

Working Conditions

Working conditions vary considerably in this occupation. Interior designers frequently meet with clients, other consultants and contractors in clients' workplaces and homes, in interior design offices, in consultants' offices and at work sites. Work hours are sometimes long or irregular and may include weekends and evenings.

Personal Characteristics

Interior designers need the following characteristics:

- creative ability and imagination
- the ability to visualize spatial relationships in three dimensions
- good oral, written and graphic communication skills
- an interest in attending to details

- the ability to work on several projects in different stages of development at the same time
- the ability to deal with the pressure of deadlines
- the ability to work well with people from a wide variety of backgrounds.

They should enjoy synthesizing information to develop plans and design concepts, taking a methodical approach to work requiring precision, and working with people.

Educational Requirements

There are no standard education requirements for interior designers in Alberta. However, to be licensed by the Alberta Association of Architects, interior designers must have **a degree in interior design plus related experience**, or an equivalent combination of education and experience.

In Alberta, **Mount Royal College** in Calgary offers a four year Bachelor of Applied Interior Design degree program. The entrance requirement is an average of at least 60 per cent in five appropriate Grade 12 subjects, including Pure Math 30 and at least 65 per cent in English 30 or equivalent. A portfolio and pre-testing are required.

The following post-secondary institutions offer two year interior design diploma programs which are not and cannot be accredited by the Foundation for Interior Design Education Research at this time. Graduates of these programs are not eligible for professional registration without further education and a longer period of work experience (see Other Requirements below).

- **Lakeland College** in Vermilion offers a two year Interior Design diploma program. The entrance requirement is a high school diploma or equivalent with Pure or Applied Math 30 (or Math 33) and at least 65 per cent in English Language Arts 30-1 or English 30 (or 75 per cent in ELA 30-2 or English 33). Applicants must complete an assignment. This program is accredited by the National Kitchen and Bath Association.
- **Lethbridge Community College** offers a two year Interior Design and Merchandising diploma program. The entrance requirement is a high school diploma with at least 60 per cent in a Grade 12 math. Alternate admission requires successful completion of a computerized placement test.
- The **Northern Alberta Institute of Technology (NAIT)** in Edmonton offers a two year Interior Design Technology diploma program. The entrance requirement is a high school diploma or equivalent with English 30 or 33, Pure Math 30, and one of the following: Physics 30 (recommended), Science 30 or Chemistry 30. This is a quota program so admission is competitive.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Other Requirements

Under Alberta's Architects Act and Interior Design Regulation, the Alberta Association of Architects (AAA) oversees interior designer licensing which entitles designers to practice a portion of the scope of practice defined in the Architects Act and Regulations. You do **not** have to be licensed if you do not practice as or use the title Licensed Interior Designer.

Only registered members of the Interior Designers of Alberta may use the title Registered Interior Designer. Membership requires successful completion of a National Council for Interior Design Qualification exam.

Employment and Advancement

(section revised JANUARY 2006)

Interior designers are employed by:

- interior design firms
- architectural firms
- institutions such as schools, universities and hospitals
- building development companies
- corporate planning offices
- hotels and restaurants
- manufacturers
- government planning offices
- property management companies.

Graduates of recognized four year degree programs usually begin work in interior design and architectural offices, or the planning departments of corporations or institutions. Graduates of two year diploma programs may find employment in

these types of offices or as salespeople in the furnishing departments of retail stores, home furnishing chains, building supply centres, drapery suppliers, office supply firms and housing tract developers. Experience gained in sales positions may not be eligible for credit toward professional recognition.

In Alberta, over 75 per cent of people employed as interior designers work in the **Professional and Technical Services** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Professional and Technical Services industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

About 2,650 Albertans are employed in the Interior Designers occupational group which is expected to grow 1.3 to 2.3 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 30 to 60 **new** positions will be created each year **in addition** to job openings created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Interior Designers occupational group working part-time or full-time earned from **$23,600 to $141,600 a year.** The average salary was **$49,800 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Association of Architects (AAA) website: www.aaa.ab.ca

Careers in Interior Design website: careersininteriordesign.com

Construction Sector Council website: www.csc-ca.org

Foundation for Interior Design Education Research (FIDER) website: www.fider.org

Interior Designers of Alberta (IDA) website: www.interiordesignalberta.com

Interior Designers of Canada (IDC) website: www.interiordesigncanada.org

National Council for Interior Design Qualification (NCIDQ) website: www.ncidq.org

National Kitchen and Bath Association (NKBA) website: www.nkba.org

Related Occupational Profiles

Architect
Architectural Technologist
Interior Decorator

Related High School Subjects

Communication Technology; Construction Technologies; Design Studies; Enterprise and Innovation; Fashion Studies; Fine Arts (Visual Arts); Language Arts; Management and Marketing; Mathematics; and Science (Physics)

Related Post-Secondary Fields of Study

Human Ecology, Fashion and Food Sciences

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Internal Auditor

Produced NOVEMBER 2005

Internal auditors conduct financial, systems and operational audits in their organizations. (External auditors are usually accountants who are not part of the organization being audited.)

NOC Number(s): 1111.1
Minimum Education: 4 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **M i d**

Duties

Internal auditors systematically collect and analyze information about the organization's management framework, internal controls, information systems, procedures and outputs to:

- compare current structures and performance against established standards
- identify risks to efficiency, economy, effectiveness and corporate values
- ensure compliance with legislation and regulations
- determine the extent to which factors affecting performance, accountability and the safeguarding of assets are being identified, reported and effectively monitored.

Internal auditors also:

- examine whether the objectives of the organization and its programs or lines of business are understood by employees, and are reflected in the organization's plans, decision-making, and authority and accountability structure
- provide consulting services to improve their organizations' operations and ability to accomplish objectives
- conduct pre-implementation audits to determine if systems and programs under development will work as planned
- ensure that appropriate controls are in place to minimize risks
- report findings to management and make recommendations.

Working Conditions

To perform detailed reviews, internal auditors must travel to the offices being audited. This may mean travelling across the city or across the country depending on the organization. Hours of work are usually standard office hours but overtime may be required at year end or to meet project deadlines.

Personal Characteristics

Internal auditors need the following characteristics:

- high ethical standards
- objectivity and sound judgment
- initiative
- the ability to think analytically, independently and creatively
- the ability to work effectively on their own or with others at all levels of the organization
- good communication skills in person and in writing
- good organizational skills
- the ability to adapt to change.

They should enjoy being methodical and persistent, finding innovative solutions to problems and working with others.

Educational Requirements

Auditors come from various backgrounds including accounting, business, information systems, engineering or economics. Some employers require a university degree that directly relates to the nature of the organization's business.

In general, the minimum qualification is a bachelor's degree or a professional designation such as:

- Certified Internal Auditor (CIA) from the **Institute of Internal Auditors** in Florida
- Certification in Control Self-Assessment Auditor (CCSA), also from the Institute of Internal Auditors
- Chartered Accountant (CA) from the **Institute of Chartered Accountants of Alberta**
- Certified Management Accountant (CMA) from the **Society of Management Accountants of Alberta**
- Certified General Accountant (CGA) from **Certified General Accountants of Alberta**.

Information systems auditors may qualify for the Certified Information Systems Auditor (CISA) designation from the **Information Systems Audit and Control Association** in Illinois. For more information, see the Systems Auditor occupational profile.

Employment and Advancement

(section revised JANUARY 2006)

Internal auditors are employed by:

- medium and large corporations
- federal, provincial and municipal government departments
- financial institutions
- non-profit organizations.

Some corporations use internal audit as a training ground for management positions. Internal auditors get a good overall perspective of an organization's operations because they are usually responsible for auditing all areas. They also make recommendations directly to senior management and have access to the Board of Directors through the Audit Committee. Advancement opportunities are therefore good.

Internal auditors are part of the larger National Occupational Classification 1111: Financial Auditors and Accountants. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Professional and Technical Services**
- **Oil and Gas Extraction**
- **Public Administration**
- **Finance, Insurance and Real Estate**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

About 26,400 Albertans are employed in the Financial Auditors and Accountants occupational group which is expected to grow 1.5 to 2.5 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 390 to 660 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since internal auditors form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for internal auditors.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Financial Auditors occupational group working part-time or full-time earned from **$19,300 to $139,500 a year.** The average salary was **$57,200 a year.**

Other Sources of Information

Certified General Accountants of Alberta website: www.cga-alberta.org

Information Systems Audit and Control Association website: www.isaca.org

Institute of Chartered Accountants of Alberta website: www.icaa.ab.ca

Institute of Internal Auditors website: www.theiia.org

Society of Management Accountants of Alberta website: www.cma-alberta.com

Related Occupational Profiles

Accountant
Accounting Technician
School Business Official
Systems Auditor

Related High School Subjects

Financial Management; Information Processing; Language Arts; Legal Studies; Management and Marketing; and Mathematics

Related Post-Secondary Fields of Study

Business, Management and Administrative Studies; Computer and Information Technology; Engineering, Architecture and Related Studies; and Social Sciences, Law and Religious Studies

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For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Interpreter

Produced MARCH 2005

Interpreters translate the spoken word from one language to another.

NOC Number(s): 5125.3
Minimum Education: 4 years post-secondary education/training
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: **M I s**

Duties

Interpreters may translate during pauses in a monologue (consecutive interpretation) or interpret immediately as words are spoken at conferences and meetings(simultaneous interpretation via headphones). Simultaneous interpreters generally work in teams, each person working for 20 minute periods during a session.

In addition to translating spoken words, translators may provide background cultural information or identify and resolve conflicts related to the meaning of words, concepts, practices or behaviour.

In alphabetical order, the most commonly translated languages in Canada are:

- Chinese
- English
- French
- German
- Japanese
- Polish
- Punjabi
- Russian
- Spanish
- Vietnamese.

For information regarding sign language interpreters, see the Sign Language Interpreter occupational profile.

Working Conditions

Interpreters often work evenings and weekends to provide services at conferences and meetings.

Personal Characteristics

Interpreters need the following characteristics:

- able to articulate and respond quickly
- inquisitive
- meticulous
- interested in researching information in new areas.

They should enjoy variety, precision and creativity, and working with people.

Educational Requirements

(section revised JULY 2005)

Interpreters should have training and experience in written translation prior to training in interpreting (for more information, see the Translator occupational profile). A Bachelor's degree in one or more languages is recommended.

The best practical training for interpreters is to spend a considerable length of time living in the culture of the targeted language.

European standards for translators and interpreters require at least two or more languages in addition to their mother tongue. Studying or living in Europe is excellent preparation for translating with international organizations.

The only interpreter training programs in Canada are at the **University of Ottawa**. The entrance requirement for these one and two year diploma programs is a related university degree, certificate or diploma plus relevant experience. Accreditation from a professional association of translators or interpreters, or equivalent work experience, is also required. Applicants must pass an entrance exam.

In Alberta, many post-secondary institutions offer courses in various languages. The following institutions offer full programs in one or more languages or other programs related to interpretation:

- **Athabasca University** offers three year and four year Bachelor of Arts (BA) degree programs in French by distance education. Applicants must be at least 16 years of age and live in North America.
- **Concordia University College of Alberta** in Edmonton offers a three year BA program in French. The entrance requirement is an average of at least 60 per cent in English 30 and four other appropriate 30 level subjects.
- The **University of Alberta** in Edmonton offers:
    - Bachelor of Arts (BA) programs in Germanic Languages (German, Scandinavian, Norwegian), Latin, Romance Languages (French, Italian, Portuguese, Spanish), Slavic languages (Polish, Russian and Ukrainian), and East Asian Languages (Chinese and Japanese). The entrance requirement is an average of at least 65 per cent in English 30, a 30-level language other than English and three other appropriate 30-level subjects (Social Studies 30 recommended). Some of these programs are offered in Camrose.
    - a certificate in Translation Studies in French, German and Spanish (which can be obtained while completing BA requirements).
    - programs in French and French-Canadian through the Faculte St-Jean. All instruction is in French.
    - master's and doctoral (PhD) degree programs with a specialization in translation. The admission requirement is an acceptable average in a related four year bachelor degree (or equivalent) program.
- The **University of Calgary** offers four year and five year (co-op) BA degree programs in French, German, Russian and Spanish. The entrance requirement is a high school diploma or equivalent with an average of at least 70 per cent in English 30 and four of the following: Social Studies 30, Pure Math 30, Applied Math 30, Math 31, Biology 30, Chemistry 30, Physics 30, Science 30, a language 30 other than English and one five credit Grade 12 subject.
- The **University of Lethbridge** offers four year degree programs in French, German and Spanish. The entrance requirement is an average of at least 65 per cent in English 30 and three other appropriate 30 level subjects plus a fifth Grade 12 subject.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Other Requirements

The Association of Translators and Interpreters of Alberta (ATIA) offers certification for Court Interpreters.

Employment and Advancement

(section revised JANUARY 2006)

Few interpreters, other than those in government, are employed full-time or part-time. Interpreters generally work on a fee-for-service basis:

- at meetings and conferences
- in courts of law or legal hearings
- during visits by foreign dignitaries
- during medical or psychological assessments
- accompanying trade delegations
- for government translation bureaus.

Advancement generally takes the form of building a more extensive client base.

Interpreters are part of the larger National Occupational Classification 5125: Translators, Terminologists and Interpreters. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Professional and Technical Services**
- **Public Administration**

- **Educational Services**
- **Information, Culture and Recreation.**

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 700 Albertans are employed in the Translators, Terminologists and Interpreters occupational group which is expected to grow 2.2 to 3.2 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 10 to 30 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since interpreters form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for interpreters.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Freelance interpreters charge hourly fees that depend on their education, background and area of specialization. Annual incomes therefore vary from one interpreter to another and may vary from one year to another.

According to the **2005 Alberta Wage and Salary Survey**, part-time or full-time starting salaries for Albertans working in the Translators, Terminologists and Interpreters occupational group ranged from **$17,100 to $33,700 a year.** After three years, salaries ranged from **$35,800 to $41,900**. The average salary was **$35,600 a year.**

Other Sources of Information

EDinfo website: www.alis.gov.ab.ca/edinfo

Association of Translators and Interpreters of Alberta (ATIA) website: www.atia.ab.ca

Canadian Translators, Terminologists and Interpreters Council (CTTIC) website: www.cttic.org

Related Occupational Profiles

English as a Second Language Teacher - Adults
Foreign Service Officer
Linguist
Sign Language Interpreter
Translator

Related High School Subjects

Language Arts; Languages (other than English); Mathematics; and Social Studies

Related Post-Secondary Fields of Study

Humanities and Languages

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Interpretive Naturalist

Produced NOVEMBER 2003

Interpretive naturalists explain the natural and scientific features of parks, botanical gardens and wilderness areas to visitors.

NOC Number(s): 2121.1
Minimum Education: 2 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **I O D**

Duties

Duties and responsibilities vary from one position to another but, in general, interpretive naturalists:

- research the area's natural history or environment
- conduct nature walks and field outings or provide campground talks
- respond to questions from the public
- prepare brochures and write newspaper articles and labels or signs
- develop, present and evaluate educational programming for the general public or particular audiences (e.g. children, horticultural groups)
- assist with general facility operations.

To make information interesting and meaningful for visitors, interpretive naturalists may participate in developing and presenting interpretive theatre (dramatic) programs. They may also develop and maintain photographic and information files concerning the local environment by:

- conducting interviews
- collecting and taking photographs to provide illustrations for presentations and publications.

Working Conditions

In many parks, interpretive naturalists specialize in particular types of visitor programming. Depending on their specialty, they may spend long hours outdoors. At many sites, especially during the summer months, interpreters work days, evenings and weekends.

Personal Characteristics

Interpretive natualists need the following characteristics:

- an enthusiastic interest in nature
- the ability to communicate with visitors in a pleasant, confident and engaging manner
- the ability to relate well to all kinds of people and work as part of a team
- creativity for developing presentations
- writing skills for developing education and marketing materials
- flexibility.

They should enjoy synthesizing information to develop innovative programs and exhibits, using instruments and equipment to perform tasks requiring precision and being responsible for projects.

Educational Requirements

(section revised OCTOBER 2005)

Most interpretive naturalists have **related post-secondary education**. This is a multi-disciplinary field that draws from a wide range of academic disciplines, including:

- the natural sciences (e.g. biology, botany, environmental science, forestry, zoology)

- education
- recreation and leisure studies
- drama, communication arts or and other liberal arts (e.g. anthropology, archeology, history, native studies).

Post-secondary institutions located throughout Alberta offer a variety of programs that may provide a suitable background for interpretive naturalists. Admission requirements for bachelor's degree programs vary depending on the program and the institution but generally include a high school diploma or equivalent with an average of at least 60 per cent (70 per cent for some programs) in English 30 and four other Grade 12 subjects specified by the institution (e.g. 30-level sciences, Social Studies 30, Pure Math 30 or a 30-level language other than English).

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

When choosing a program, prospective interpretive naturalists should discuss their career plans with people currently working in the type of environment in which they would eventually like to work (e.g. parks or wildlife interpretive centres).

Alberta Tourism Education Council (ATEC) offers a nationally-recognized certification program for heritage interpreters that requires completion of 900 hours of on-the-job experience, a workbook and written exam, and independent industry evaluation.

Associations such as **Interpretation Canada**, **Museums Alberta** and the **Canadian Museums Association** also offer professional development opportunities.

Employment and Advancement

(section revised JANUARY 2006)

Interpretive naturalists may be employed full-time, part-time or on a contract basis by:

- national or provincial park services
- urban or rural nature centres
- science or ecology interpretive centres
- wildlife or bird sanctuaries
- zoos
- botanical gardens
- private eco-tour operators.

Many positions are seasonal. These temporary positions are excellent entry-level opportunities for gaining experience. Competition for permanent positions is keen so related work experience (as an employee or volunteer) is essential.

Experienced interpretive naturalists may move into:

- supervisory or management positions such as program co-ordinator or district interpretation/education supervisor
- administrative positions
- related fields such as commercial or tour company guiding, public relations, marketing or education.

In some organizations, advancement to supervisory and management positions requires a graduate degree as well as several years of related experience.

Interpretive naturalists are part of the much larger National Occupational Classification 2121: Biologists and Related Scientists. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Professional and Technical Services**
- **Public Administration**
- **Health Care and Social Assistance**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- time of year (for seasonal jobs)
- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

About 1,100 Albertans are employed in the Biologists and Related Scientists occupational group which is expected to grow 1.3 to 2.3 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 10 to 30 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since interpretive naturalists form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for interpretive naturalists.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised SEPTEMBER 2005)

Wages for seasonal and entry-level interpretive positions may range from **$10 to $15 per hour (2003 estimate)**.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Biologists occupational group working part-time or full-time earned from **$29,400 to $103,200 a year.** The average salary was **$64,800 a year.**

Other Sources of Information

(section revised OCTOBER 2005)

Alberta Tourism Education Council (ATEC) website: www.atec.ca

Canadian Council for Human Resources in the Environment Industry website: www.cchrei.ca

Canadian Museums Association website: www.museums.ca

Interpretation Canada website: www.interpcan.ca

Museums Alberta website: www.museumsalberta.ab.ca

Related Occupational Profiles

Biologist
Ecologist
Entomologist
Environmental Education Specialist
Geographer
Heritage Interpreter
Outdoor Sport/Recreation Guide
Park Warden

Related High School Subjects

Communication Technology; Forestry; Language Arts; Mathematics; Science (Biology); Social Studies; Tourism Studies; and Wildlife

Related Post-Secondary Fields of Study

Communications; Education and Library Studies; Environment, Forestry and Related Studies; Fine Arts and Performing Arts; Physical Education and Recreation; Sciences; and Social Sciences, Law and Religious Studies

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For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Investment Advisor

Produced NOVEMBER 2005

Investment advisors assist clients by providing investment advice and recommending the purchase or sale of securities. Taking into account a client's income, assets, age, tax burden and financial expectations, investment advisors help the client identify financial goals and recommend investments to assist in achieving those goals.

NOC Number(s): 1113.1
Minimum Education: 2 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: I S M

Duties

Investment advisors deal with a variety of investments such as:

- stocks
- bonds
- mutual funds
- government treasury bills and bonds
- options
- pooled funds
- insurance products.

They may work with individual investors or large institutional accounts but, in general, investment advisors:

- discuss investment objectives with clients and make recommendations accordingly (e.g. low risk securities only, or a balance of high and moderate risk securities with long term growth potential)
- maintain strict confidentiality regarding client information
- buy and sell investment products
- advise clients on investment decisions such as what and when to buy and sell
- recommend securities and help clients develop a portfolio
- seek out new clients by identifying and calling on potential clients.

Investment advisors are expected to build their own client base with minimal assistance from their firm. Early in their careers, advisors spend most of their time identifying and calling on prospective clients. Once they have a base of satisfied clients, new business is also generated through referrals.

Working Conditions

Advisors usually work in an office setting. They work long days and may be out of the office often. This is a fiercely competitive business with constant pressure to trade securities.

Personal Characteristics

Successful investment advisors are:

- self-motivated
- aggressive and able to work in a competitive environment
- quick decision-makers
- able to deal with rejection
- quick learners
- good listeners
- energetic and willing to work hard
- able to handle a stressful working environment.

In addition, they need the following characteristics:

- an aptitude for numbers
- strong interpersonal skills
- excellent sales skills
- experience with computers
- the coping skills required to deal with many rapid changes.

Investment advisors should enjoy taking a methodical approach to collecting information, analyzing situations and finding innovative solutions, consulting with people and directing the work of others.

Educational Requirements

Brokerage firms generally require applicants to have:

- related post-secondary education, preferably a university degree.
- successfully completed the **Canadian Securities Institute (CSI)** Canadian Securities Course.

If they do not already have them, investment advisors may take other CSI courses after they are hired:

- Conduct and Practices Handbook
- Professional Financial Planning
- Investment Management Techniques.

In Alberta, the following post-secondary institutions offer finance-related degree programs:

- **Athabasca University**, which has an open admissions policy, offers four year Bachelor of Commerce and Masters in Business Administration (MBA)programs via distance education.
- **Concordia University College of Alberta** in Edmonton offers a four year Bachelor of Management degree program.
- **Grande Prairie Regional College** offers a four year Bachelor of Commerce degree program in collaboration with Athabasca University. Grande Prairie Regional College provides the classroom study and the degree is granted through Athabasca University.
- **The King's University College** in Edmonton offers a four year Bachelor of Commerce degree program.
- **Lakeland College** in Vermilion offer a Bachelor of Applied Financial Services degree program. The entrance requirement is successful completion of a two year diploma in Business Administration.
- **Mount Royal College** in Calgary offers a Bachelor of Applied Financial Services degree program. The entrance requirement is successful completion of a two year diploma in Business Administration.
- The **Northern Alberta Institute of Technology (NAIT)** in Edmonton offers a Bachelor of Applied Business Administration - Finance degree program. The entrance requirement is successful completion of a two year diploma in Business Administration with specified courses and a minimum GPA of 65 per cent, 2.3, 6 or C+.
- The **University of Alberta** in Edmonton offers four year and five year (co-op) Bachelor of Commerce degree programs and MBA programs with a specialization in finance. The entrance requirement for the bachelor's degree program is a pre-professional year with specific courses.
- The **University of Calgary** Haskayne School of Business offers four year and five year (co-op) Bachelor of Commerce and MBA programs with specializations in finance.
- The **University of Lethbridge** offers a four year Bachelor of Management degree program and post-diploma programs with a specialization in finance.

One and two year university transfer programs are offered by post-secondary institutions throughout the province.

First year admission requirements for university and university transfer programs vary from one institution to another but generally include a high school diploma (or equivalent) with a competitive average of at least 60 per cent (over 70 per cent for some programs) in English Language Arts 30-1 (or English 30), Pure Math 30 (or Math 30) and three other approved Grade 12 subjects.

Two year financial planning or services diploma programs are offered by:

- **Lakeland College** in Vermilion
- **Medicine Hat College**
- **Northern Alberta Institute of Technology (NAIT)** in Edmonton
- **Red Deer College**.

Business administration and management programs are offered by:

- **Alliance University College** in Calgary
- **Athabasca University**

- **Canadian University College** in College Heights
- **Grande Prairie Regional College**
- **Keyano College** in Fort McMurray
- **The King's University College** in Edmonton
- **Lakeland College** in Vermilion and Lloydminster
- **Lethbridge Community College**
- **Medicine Hat College** in Medicine Hat and Brooks
- **Mount Royal College** in Calgary
- the **Northern Alberta Institute of Technology (NAIT)** in Edmonton and at various locations
- **Northern Lakes College** in Grouard and other locations
- **Portage College** in Lac La Biche
- **Red Deer College**
- the **Southern Alberta Institute of Technology (SAIT)** in Calgary.

Minimum admission requirements for financial planning and business administration programs vary but generally include a high school diploma with a specified minimum average or minimum marks in particular courses (e.g. Grade 12 English).

Continuing education programs are often offered on an as needed basis.

For current information on specific programs and their admission requirements, please check post-secondary calendars or websites.

Employment and Advancement

(section revised JANUARY 2006)

Investment advisors work in the securities industry for investment and stock brokerage firms. Some of the larger investment firms hire summer students which provides excellent experience. Firms also recruit students on campus in the Spring. New employees generally start in entry-level Discount Broker positions.

Advancement in the investment field depends almost entirely on the initiative and ability of the individual. Some investment advisors become senior managers in their firms or move into senior financial positions in government or business.

Investment advisors are part of the larger National Occupational Classification 1113: Securities Agents, Investment Dealers and Brokers. In Alberta, most people employed in this classification work in the **Finance, Insurance and Real Estate** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Finance, Insurance and Real Estate industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 3,450 Albertans are employed in the Securities Agents, Investment Dealers and Brokers occupational group which is expected to grow 1.7 to 2.7 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 50 to 100 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since investment advisors form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for investment advisors.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Investment advisors may receive commissions on transactions or charge a flat fee based on the value of assets under management. Many advisors earn both kinds of income.

New employees may be paid a salary during the first year. Usually, all of their income is from commissions by the end of their third year.

According to the **2005 Alberta Wage and Salary Survey**, Albertans with three years of experience working part-time or full-time in the Securities Agents, Investment Dealers and Traders occupational group earned from **$35,300 to $46,700 a year.** The average salary for this group was **$51,100 a year.**

Other Sources of Information

Investment Dealers Association of Canada website: www.ida.ca

Canadian Securities Institute (CSI) website: www.csi.ca

Investment Dealers Association (IDA) website: www.ida.ca

Related Occupational Profiles

Banking/Investment Manager
Financial Analyst
Financial Planner
Insurance Agent/Broker
Investment Underwriter

Related High School Subjects

Enterprise and Innovation; Financial Management; Information Processing; Language Arts; Management and Marketing; Mathematics; and Social Studies

Related Post-Secondary Fields of Study

Business, Management and Administrative Studies

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Investment Underwriter

Produced JANUARY 2003

Investment underwriters help governments and corporations raise capital by providing financial advice and underwriting or distributing new securities.

NOC Number(s): 1114.4
Minimum Education: 6 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **M I D**

Duties

When governments need to raise new capital, they may borrow funds by issuing bonds. The money owed to bond holders is then repaid from taxes and other revenues collected over a number of years. Corporations requiring funds can obtain financing by issuing bonds, debentures or shares. Investment firms that offer underwriting services may buy securities at a fixed price in anticipation of being able to sell them to others, or act as agents.

The underwriting department, sometimes called the corporate finance department or the investment banking department, generates revenue by:

- obtaining funds on terms that are suitable for the client and competitive with other issues
- ensuring that any new security is attractive to investors and well-timed so the firm will be able to distribute the entire offering.

To achieve these goals, investment underwriters must be able to help their clients with financial planning for the future by:

- recommending what they consider to be the best solution to a financing problem in a given circumstance
- advising clients on which markets (Canadian, U.S., European) would be the most advantageous for raising the necessary funds.

Corporate underwriters:

- investigate the issuing company's financial status, future outlook, earning capacity and management
- analyze the value of assets that would secure the new issue
- review the condition of securities markets and other factors
- may assist the issuer in completing a prospectus (a description of the business of the company and the securities being sold) which must be filed with provincial securities commissions before a new issue can be brought to the market
- decide whether to place the issue using only the firm's own sales force or to bring in additional companies (which reduces the risk to one company and distributes the issue to a broader clientele)
- advise clients regarding matters such as debt load, balancing investment portfolios, mergers, acquisitions, asset sales and corporate reorganization.

Public finance underwriters assist federal, provincial and municipal governments to:

- determine their future financial requirements
- create bond or debenture issues that will offset the financial requirements identified.

Working Conditions

Underwriting is a highly specialized occupation that involves working long hours in an office environment, and working under the pressure of constant deadlines. Depending on the firm, a considerable amount of travelling may be required. Underwriting staff work apart from the rest of the firm, usually in head offices.

Personal Characteristics

Investment underwriters need the following characteristics:

- energetic and able to learn quickly
- good analytical abilities
- excellent communication and interpersonal skills
- perseverance
- leadership skills
- a degree of aggressiveness.

They should enjoy taking a methodical approach to gathering information, analyzing information and finding innovative solutions to problems, negotiating and directing the work of others.

Educational Requirements

Securities firms hire investment underwriters who have related work experience and at least one of the following qualifications: a Master of Business Administration (MBA) degree, a Law (LLB) degree, a Chartered Financial Analyst (CFA) designation, a professional accountant designation or the Canadian Investment Manager (CIM) designation. For more information, see:

- the Management Consultant occupational profile regarding MBA degree programs
- the Lawyer occupational profile regarding Law degree programs
- the Financial Analyst occupational profile regarding the CFA designation
- the Accountant occupational profile regarding professional accountant designations.

The CIM designation is offered by the **Canadian Securities Institute.** Candidates must successfully complete three courses, including the Canadian Securities Course. Courses are designed to meet the educational requirements for **Investment Dealers Association of Canada** licensing as an associate or full portfolio manager.

Most firms require their investment underwriters to have completed the Canadian Securities Course (for more information, see the Investment Advisor occupational profile).

Employment and Advancement

(section revised JANUARY 2006)

Many investment firms prefer to train their own underwriting staff rather than hire someone trained elsewhere. Competition for underwriting positions is often keen. On-the-job training may include working for about a year under the supervision of senior underwriting staff, preparing analyses and attending meetings with clients. An apprenticeship period as a junior underwriter follows.

Competition is also keen for opportunities to advance to senior management positions.

Investment underwriters are part of the larger National Occupational Classification 1114: Other Financial Officers which also includes financial planners, financial examiners and inspectors, financial investigators, trust officers and mortgage brokers. In Alberta, over 75 per cent of people employed in this classification work in the **Finance, Insurance and Real Estate** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Finance, Insurance and Real Estate industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Employment growth is best in the corporate sector.

Over 7,850 Albertans are employed in the Other Financial Officers occupational group which is expected to grow 1.7 to 2.7 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 130 to 220 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since investment underwriters form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for investment underwriters.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised SEPTEMBER 2005)

Investment underwriters' incomes are highly variable. Most underwriters are paid base salaries plus bonuses. Base salaries may start at about **$60,000 per year**. Senior investment underwriters may earn well **over $100,000 per year** plus a bonus when the firm has a good year **(2002 estimates)**.

According to the **2005 Alberta Wage and Salary Survey**, Albertans with three years of experience working part-time or full-time in the Other Financial Officers occupational group earned **up to $145,400 a year.** The average salary was **$74,600 a year.**

Other Sources of Information

Canadian Securities Institute website: www.csi.ca

Investment Dealers Association of Canada website: www.ida.ca

Related Occupational Profiles

Financial Analyst
Investment Advisor

Related High School Subjects

Energy and Mines; Enterprise and Innovation; Financial Management; Forestry; Information Processing; Language Arts; Legal Studies; Management and Marketing; and Mathematics

Related Post-Secondary Fields of Study

Business, Management and Administrative Studies; and Social Sciences, Law and Religious Studies

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For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Ironworker

Apprenticeship and Industry Training

Produced FEBRUARY 2006

Ironworkers fabricate, construct and join scaffolding, structural steel buildings, bridges, ornamental ironwork and pre-cast structures.

NOC Number(s): 7264
Minimum Education: Apprenticeship Trade - Grade 10
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: **O M I**

Duties

Ironworkers erect structural steel components, reinforce steel, post tension tendons, and install conveyors and robotic equipment. Sometimes they perform reconstructive work on existing structures.

Duties vary from one position to another but, in general, ironworkers:

- read blueprints and specifications to lay out the work
- unload and stack steel units so each piece can be hoisted as needed
- erect and install scaffolding, construction cranes, derricks and other hoisting equipment
- assemble rigging (cables, pulleys, hooks) to move heavy equipment and materials
- attach cables from a crane or derrick and direct crane operators with hand signals or radios
- position steel units, align holes and insert temporary bolts
- check the alignments and join steel parts by bolting or welding them with an electric arc process
- assemble and erect pre-fabricated metal structures
- select, cut, bend, position and secure steel bars or wire mesh in concrete forms to reinforce the concrete
- install ornamental and other structural metalwork such as curtain walls, metal stairways, railings and power doors
- unload and install pre-cast components.

Working Conditions

Ironworkers generally work outdoors in teams or crews in remote locations as well as urban areas. Adverse weather conditions such as rain, snow or high winds can shut down projects for days at a time.

The work is physically strenuous and often dangerous when they are required to work at great heights. To reduce occupational hazards such as falling or falling objects, ironworkers must rely on safety equipment and procedures, and on one another to use good judgement.

Ironworkers may be required to lift items weighing over 25 kilograms.

Personal Characteristics

Ironworkers need the following characteristics:

- the ability to interpret blueprints
- an understanding of safe work practices
- the ability to work in high places
- physical strength, coordination, agility and balance
- the ability to travel to various work sites
- the ability to work cooperatively with others
- the ability to act quickly and decisively in emergencies.

They should enjoy doing precision work.

Educational Requirements

To work in Alberta, ironworkers must be registered apprentices or certified journeymen.

To **register** with **Alberta Apprenticeship and Industry Training**, apprentices must:

- have at least an Alberta Grade 10 education with Math 10, Math 13, Applied Math 10 or Pure Math 10 and English 10 or 13 (or equivalent) or pass an entrance exam
- find a suitable employer who is willing to hire and train an apprentice. Most employers prefer to hire high school graduates and may select apprentices from among their current employees.

The **term of apprenticeship** for:

- **ironworkers** is three years (four 9-month periods) that include a minimum of 1,125 hours of on-the-job training and six weeks of technical training each period.
- **ironworker-metal building systems erectors** is two periods. The first period spans a minimum of 24 months and includes a minimum of 3,000 hours of on-the-job training and six weeks of technical training. The second period comprises of six weeks of technical training with no minimum months required.

Applicants who have related training or work experience may be eligible for credit or certification.

Only **ironworker** apprentices may attempt the Interprovincial Exam in the final period of their apprenticeship training and, if successful, are granted a Red Seal (which is recognized in most parts of Canada).

Technical training is arranged by Alberta Apprenticeship and Industry Training and is currently offered at the Northern Alberta Institute of Technology (NAIT) in Edmonton.

Pre-employment programs for prospective apprentices and continuing education programs for journeymen may be offered on an as needed basis by the institution(s) listed above or other schools.

Employment and Advancement

Most ironworkers are employed by construction contractors. Some work in industries such as metal fabricating, oil and gas production, iron and steel production, electric utilities and rail transport. Very few are self-employed.

In the construction industry, ironworkers work on a project-to-project basis and frequently travel long distances from job to job. Union members work out of union hiring halls where work is allocated on a rotating basis.

Experienced ironworkers may advance to supervisory positions such as foreman or construction superintendent. Alberta certified journeyman ironworkers who have the supervisory or management skills required by industry may apply for an Achievement in Business Competencies Blue Seal by contacting Alberta Apprenticeship and Industry Training.

In Alberta, over 75 per cent of people employed as ironworkers work in the following industries:

- **Construction**
- **Oil and Gas Extraction**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- time of year (for seasonal jobs)
- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 1,550 Albertans are employed in the Ironworkers occupational group which is expected to grow 2.2 to 3.2 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 30 to 50 **new** positions will be created each year **in addition** to job openings created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Apprentice **ironworkers** earn at least 60 per cent of the journeyman wage rate in their place of employment in the first year, 70 per cent in the second, 80 per cent in the third and 90 per cent in the fourth. According to the Alberta Provincial Apprenticeship Committee for this trade, journeyman wage rates vary, but generally range from **$18 to $28 an hour plus benefits** (2005 estimate).

Apprentice **ironworker - metal building systems erectors** earn at least 60 percent of the journeyman wage rate in their place of employment in both the first and second period. According to the Alberta Provincial Apprenticeship Committee for this trade, journeyman wage rates vary, but generally range from **$14 to $28 an hour plus benefits** (2004 estimate).

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Ironworkers occupational group working part-time or full-time earned from **$22,600 to $79,100 a year.** The average salary was **$50,200 a year.**

Other Sources of Information

Alberta Apprenticeship and Industry Training website: www.tradesecrets.org

Alberta Construction Industry "Trade Up!" website: www.careersconstruction.com

Calgary Construction Association website: www.cca.cc

Construction Sector Council website: www.csc-ca.org

Related Occupational Profiles

Boilermaker
Structural Steel and Plate Fitter
Welder

Related High School Subjects

Construction Technologies; Design Studies; Fabrication Studies; Language Arts; Mathematics; Physical Education; and Science (Physics)

Related Post-Secondary Fields of Study

Trades, Industrial and Related Training

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Jeweller

Produced APRIL 2003

Jewellers design, make, repair and appraise fine, fashion and costume jewellery.

NOC Number(s): 7344.1
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus below average occupational growth in Alberta
Interests: **O I M**

Duties

Jewellers' duties and responsibilities vary from one job to another but, in general, they:

- design, create or repair jewellery made of precious and semi-precious metals
- set precious and synthetic stones in jewellery mountings.

Jewellers may specialize in certain types of jewellery (e.g. silver or gold) or in particular operations (e.g. design or repair).

- **Jewellery designers** create one of a kind pieces of jewellery. They may use computers to help customers choose from basic styles and mix and match cuts, shanks, sizes and stones to create unique pieces.
- **Model makers** create designs and moulds for mass produced pieces. They may use computer-aided design and manufacturing programs to design products and automate mould and model making.
- **Jewellers in manufacturing** usually specialize in operations such as setting stones, engraving, electroplating, soldering or polishing.
- **Jewellers in retail outlets** sell jewellery items, enlarge and reduce ring sizes, set stones and replace claws, and replace broken clasps and mountings.

Jewellers may also be gemmologists or watch repairers (for more information, see the Gemmologist and Watch Repairer occupational profiles). Some jewellers are qualified to appraise the value of jewellery, gemstones and diamonds.

Working Conditions

Jewellers work indoors, usually seated at specially designed and equipped work benches. Their hours are regular but may involve shift work in manufacturing firms, or evening and weekend work in the retail trade. Overtime may be required during busy periods such as Christmas and the summer holiday season.

Personal Characteristics

Jewellers need the following characteristics:

- good eyesight or corrected vision
- good eye-hand co-ordination and finger dexterity
- the ability to concentrate for long periods of time on minute work.

In addition, designers and model makers must be artistic and able to visualize line, form and colour in three dimensions. Jewellers working in retail stores must have good customer service skills.

Jewellers should enjoy using tools and instruments to perform tasks requiring precision, analyzing information to perform appraisals, and having clear rules and organized methods for their work.

Educational Requirements

In Alberta, many jewellers are trained through **a combination of short courses and experience on the job**. Comprehensive on-the-job training is difficult to obtain because most shops specialize in a particular type of work.

Most employers prefer to hire graduates of recognized training programs who already have some basic skills in the trade. Job applicants are expected to have their own set of hand tools.

Prospective jewellers are encouraged to discuss their career plans with potential employers before enrolling in a training program. Different training routes are more appropriate for different specializations. For example, jewellery designers need training in the visual arts. Admission to most post-secondary art programs requires a high school diploma and a portfolio demonstrating artistic ability.

In Alberta, the **Alberta College of Art and Design** in Calgary offers a four year Visual Arts diploma or degree program with a specialization in jewellery and metals. The program may be taken full-time or part-time. Students apply for admission to the jewellery and metals program after completing a foundation (first) year or equivalent post-secondary fine arts education. The entrance requirement for the foundation year is a high school diploma or equivalent with 60 per cent in English 30 or 65 per cent in English 33 and an overall average of 60 per cent in four Grade 12 subjects. An art portfolio is also required.

The provincial government in **British Columbia** administers a formal four year apprenticeship program for jewellers and goldsmiths.

Elsewhere in Canada, related courses and programs are offered by a variety of colleges and private vocational schools, including the following:

- **George Brown College of Applied Arts and Technology** in Toronto
- **Georgian College** in Barrie
- **Granton Institute of Technology** in Toronto
- the **New Brunswick College of Craft and Design** in Fredericton
- the **Nova Scotia College of Art and Design** in Halifax
- **Nunavut Arctic College**
- the **Ontario College of Art and Design** in Toronto
- **Vancouver Community College**.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

(section revised JANUARY 2006)

Jewellers are employed by jewellery stores, de ign studios, repair shops, wholesale companies and manufacturers. Graduates of art and design programs often work for other artists or work in other occupations while they establish their own independent jewellery design studios.

Advancement generally takes the form of increasing specialization or building a business. Opportunities to advance to supervisory positions are limited.

Jewellers who wish to start their own retail businesses must make a large financial investment in a highly competitive industry. Setting up a design studio involves lower overhead costs.

Jewellers are part of the larger National Occupational Classification 7344: Jewellers, Watch Repairers and Related Occupations. In Alberta, most people employed in this classification work in the following industries:

- **Repair, Maintenance, Personal and Other Services**
- **Retail Trade**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

About 300 Albertans are employed in the Jewellers, Watch Repairers and Related Occupations group which is expected to expected to grow 0.5 to 1.5 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover. (**Note**: Since jewellers form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for jewellers.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised MAY 2004)

Salary ranges for jewellers **vary tremendously** depending on the type of work, the jeweller's training and experience, and whether or not commission sales are involved. Jewellery store employees may be able to purchase store merchandise at reduced prices.

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Related Occupational Profiles

Craftsperson
Gemmologist
Personal Property/Equipment Appraiser
Watch Repairer

Related High School Subjects

Cosmetology Studies; Design Studies; Fabrication Studies; Fashion Studies; Fine Arts (Visual Arts); Language Arts; and Management and Marketing

Related Post-Secondary Fields of Study

Fine Arts and Performing Arts; Personal and Food Services; and Trades, Industrial and Related Training

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For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Judge

Produced JULY 2003

Judges adjudicate civil and family law cases (cases of non-criminal actions) and criminal cases (cases involving Criminal Code offenses and other federal and provincial statutory offenses) and administer justice according to the law.

NOC Number(s): 4111
Minimum Education: 7 years post-secondary education/training
Employment Outlook: Employment turnover (occupational growth information is not available)
Interests: **D M I**

Duties

Judges weigh evidence and determine the obligations and rights of each party in a case. Depending on the court in which they preside, they may adjudicate criminal, civil or family cases, or all three. In criminal cases without a jury, judges make findings of guilt or innocence as well as determine sentences. In constitutional and civil cases, they make rulings, assess liability and determine the appropriate remedy.

In general, judges:

- interpret and apply legislation (including the Constitution and the Charter of Rights and Freedom) and rules of procedure
- hear and determine interim and preliminary matters as well as appeals from lower courts and administrative tribunals
- assess claims or charges and weigh evidence put forward by the plaintiff (the complaining party in a lawsuit) or Crown (authority of the monarchy) in cases that are tried without a jury
- decide on legal guilt or innocence in criminal cases without a jury and the degree of liability (responsibility) of the defendant in civil cases without a jury, based on the evidence presented
- determine the appropriate remedy or damages (payment required) in civil cases without a jury
- instruct juries regarding applicable laws and weighing of evidence so they can decide on legal guilt or innocence in criminal cases and the degree of liability of the defendant and the appropriate remedy or damages in civil cases
- research and write legal judgements
- pass sentence on persons convicted in criminal cases
- participate in intra- and inter-court and interdisciplinary committees.

For information about the Provincial Court, Court of Queen's Bench and Court of Appeal in Alberta, see the Alberta Courts website.

Working Conditions

Judges preside over court proceedings for about five hours a day. Additional tasks require that they often work overtime evenings and weekends.

Courts are convened in locations throughout Alberta. Circuit judges often travel thousands of kilometres in a month.

Personal Characteristics

Judges need the following characteristics:

- the intellectual ability required to complete the necessary post-secondary education and adjudicate the law
- good listening skills
- empathy
- honesty and personal integrity
- the ability to maintain an objective attitude

- dedication to the Rule of Law and the pursuit of justice.

They should enjoy co-ordinating and interpreting information, and implementing established rules and procedures.

Educational Requirements

Provincial Court Judges are appointed to their office by the provincial government. Qualified lawyers are eligible to apply for a position when a vacancy occurs. The Provincial Court Act does not specify qualifications other than Canadian citizenship but, in general, only practising lawyers who have ten or more years of legal experience are appointed. Their appointments remain in effect until they reach the age of 70, although they may be reappointed annually up to the age of 76. For more information, see the Lawyer occupational profile.

Queen's Bench and **Court of Appeal Justices** are appointed under the federal Judges Act. They are practising lawyers who have at least ten years of experience. Their appointments remain in effect until they reach 75 years of age.

The education of a judge is a continuous and ongoing process. Throughout their terms of appointment, each judge attends and participates in a number of special courses and seminars, designed to help them keep abreast of new developments and changes in the law.

Employment and Advancement

Once a judge has been appointed to the Bench, there is relatively little opportunity for movement within the field. There are a limited number of administrative positions such as Chief Judge or Chief Justice.

Salary

Judges at the Provincial Court level earn from **$170,000 to $185,000 per year** (Chief Judge). Judges, other than the Chief Justices, at the Queen's Bench and Court of Appeal levels earn **$216,600 per year (2003 figures).**

Other Sources of Information

Alberta Courts website: www.albertacourts.ab.ca

Related Occupational Profiles

Arbitrator
Lawyer

Related High School Subjects

Language Arts; Legal Studies; and Social Studies

Related Post-Secondary Fields of Study

Social Sciences, Law and Religious Studies

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Judicial Clerk

Produced OCTOBER 2005

Judicial clerks provide paralegal support in provincial and federal courts in Alberta.

NOC Number(s): 4211.1
Minimum Education: High school diploma
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **M S I**

Duties

Judicial clerks perform many office functions as well as court duties. In general, their administrative duties include:

- reviewing and filing pleadings, petitions and other documents relevant to court actions
- contacting witnesses, lawyers and litigants (parties of a law suit) to obtain information for the court
- searching files to answer inquiries and to obtain information for the court
- answering inquiries from the general public regarding judicial procedures, court appearances, trial dates, adjournments, outstanding warrants, summonses, subpoenas, witness fees and payment of fines
- entering court results in computer systems
- assessing court fees according to an established schedule and keeping financial records.

Judicial clerks are usually assigned to a particular court such as Court of Queen's Bench or Provincial Court or to a particular courtroom. Some judicial clerks travel with the circuit court to a variety of locations throughout Alberta where court is held. Depending on the type of court, the number of cases scheduled may range from one to several hundred in one day.

Judicial clerks have a variety of responsibilities before, during and after court proceedings. Specific responsibilities vary depending on the type of court but, in general, judicial clerks are responsible for the following activities prior to court:

- prepare and review files
- ensure that all the proper documents have been submitted
- retrieve from storage all applicable exhibits (evidence)
- prepare the courtroom with paper, pens, water, easels (if necessary) and electronic equipment
- ensure that recording equipment is working.

Judicial clerks are present at all court proceedings where they:

- open court and call the court to order
- read the charges and related information to the court and, if necessary, record the defendant's plea
- amend indictments when necessary and endorse indictments with pertinent information
- swear in jury members, interpreters, witnesses and accused
- record final dispositions
- conduct roll calls and poll jurors
- swear in witnesses and interpreters
- ensure the security of exhibits (e.g. money, drugs, negotiable bonds, weapons)
- accurately record proceedings by using recording equipment.

After court is adjourned for the day, judicial clerks:

- prepare documents that record the outcome of proceedings
- secure exhibits and the courtroom
- prepare and issue orders of the court, including probation orders, release documentation, sentencing information and summonses
- enter proceeding results.

Depending on the size of the community, judicial clerks may perform all of the above duties or work in co-operation with other judicial clerks. In rural communities, judicial clerks may be responsible for providing support for the circuit court. While on circuit, they are responsible for all areas and required to exercise independent judgment, calling the base court for direction if required.

Working Conditions

Judicial clerks work in court and office settings. They work with judges, lawyers, witnesses, jurors, litigants, social workers and the general public. Because their duties bring them into contact with those accused of crimes, they must follow personal safety and security procedures. When present in court, judicial clerks are constantly exposed to the negative aspects of society and must be able to maintain a professional distance.

Overtime is not unusual in this occupation. It is not always easy to predict when court will adjourn and judicial clerks perform after court responsibilities prior to leaving for the day. They often work under intense pressure to complete documentation and meet deadlines. Travel is required for those who have circuit court responsibilities.

Personal Characteristics

Judicial clerks need the following characteristics:

- good organizational and time management skills
- excellent communication skills in person and in writing
- good decision-making skills and the ability to work independently
- the ability to deal with stress.

They should enjoy taking a methodical approach to compiling information, dealing with people and researching legal records.

Educational Requirements

The requirements for employment as a judicial clerk are a high school diploma (or equivalent) plus a minimum of six months of relevant work experience. Graduation from a related post-secondary education program may be recognized as a substitute for the required work experience. A working knowldge of computers and good typing skills skills are essential.

Within their first year of employment, judicial clerks receive in-house paralegal or Court of Queen's Bench paralegal training to further develop their skills.

In Alberta, the following institutions offer related post-secondary programs:

- **Bow Valley College** in Calgary offers a two year Legal Assistant diploma program. The entrance requirement is high school diploma with English Langauge Arts 30-2 and Grade 10 math, or equivalent. Bow Valley College also offers a part-time Legal Administrative Assistant program that includes nine courses (21 hours each).
- The **CDI College of Business, Technology and Healthcare,** a private vocational school located in Calgary and Edmonton, offers a 54 week Professional Legal Assistant program. The entrance requirement is a high school diploma with English 30 or 33, or equivalent.
- **Grant MacEwan College** in Edmonton offers a two year Legal Assistant diploma program that is also available part-time (evenings). The entrance requirement is a high school diploma or equivalent. Applicants must successfully complete an English appraisal (or have at least 65 per cent in English Language Arts 30-1 or English 30, or 75 per cent in ELA 30-2 or English 33) and a keyboard entrance test (30 words per minute with no more than six errors).
- **HCC Choice College**, a private vocational school in Spruce Grove, offers a 25 week Legal Secretary program. The entrance requirement is a high school diploma with Grade 12 English and Math 10 or any Grade 11 math, or equivalent.
- **Red Deer College** offers a two year Legal Assistant diploma program. The entrance requirement is a high school diploma or equivalent. The College also offers a Legal Focus Certificate program for students currently employed in a legal environment.
- The **Southern Alberta Institute of Technology (SAIT)** in Calgary offers a two year Legal Assistant diploma program. The entrance requirement is a high school diploma or equivalent. A typing speed of at least 30 words per minute is recommended.
- **Trend College**, a private vocational school in Edmonton, offers a 46 week Legal Administrative Assistant program. The entrance requirement is a high school diploma with Grade 12 English and Grade 11 math, or equivalent.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Prior to enrolling in a formal training program, prospective students should investigate the suitability of the program and current employment prospects for graduates.

Employment and Advancement

(section revised JANUARY 2006)

In Alberta, judicial clerks are employed by the provincial or federal government. Advancement is based on completion of departmental paralegal training, performance and experience. A minimum of six years of work and supervisory experience is generally required to reach the highest classification level for judicial clerks.

Judicial clerks are part of the larger National Occupational Classification 4211: Paralegal and Related Occupations. In Alberta, over 75 per cent of people employed in this classification work in the **Professional and Technical Services** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Professional and Technical Services industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

About 5,550 Albertans are employed in the Paralegal and Related Occupations group which is expected to grow 1.9 to 2.9 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 100 to 160 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since judicial clerks form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for judicial clerks.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Paralegal and Related Occupations group working part-time or full-time earned from **$17,400 to $113,600 a year.** The average salary was **$37,000 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Related Occupational Profiles

Land Titles Examiner
Legal and Realtime Reporter
Paralegal

Related High School Subjects

Information Processing; Language Arts; Legal Studies; Management and Marketing; and Social Studies

Related Post-Secondary Fields of Study

Clerical and Administrative Support

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Kinesiologist

Produced MARCH 2005

Kinesiologists study the factors that influence human movement and look for ways to improve the efficiency and performance of the human body at work, in sport and in daily life.

NOC Number(s): 4167.1
Minimum Education: 4 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **S D I**

Duties

Kinesiologists study all aspects (psychological, physiological, biomechanical, historical and sociological) of human movement in home, work, sport and recreational environments.

Duties and responsibilities vary considerably from one position to another in this multi-disciplinary field. For example, kinesiologists may:

- design athletic equipment
- manage sport facilities
- provide assistance in sport management and promotion
- provide leadership in community wellness programs
- teach in schools
- conduct fitness and mobility programs to reduce accidents among the elderly
- conduct workplace assessments to reduce losses due to injury and to increase worker productivity
- assess client fitness levels and assist in developing appropriate physical activity programs
- assess cardiac patients and recommend appropriate levels of exercise
- develop rehabilitation programs for people who have movement disorders
- work with athletes to improve their fitness and performance levels
- coach or train amateur or professional athletes.

Kinesiologists working in research may:

- monitor patients while they go through an exercise program to test the efficiency of their heart and lung systems
- use electromyography, biofeedback machines, slow-motion film and videotapes to conduct assessments and testing
- study the mechanisms of fatigue during movement
- study the biomechanics and motor control of human movement
- study factors that affect commitment to fitness and rehabilitation programs.

Kinesiologists often work closely with other health and sport professionals.

Working Conditions

Kinesiologists work in a wide variety of environments outdoors and indoors (in offices, laboratories, recreation facilities, hospitals, schools and residential facilities). The work can be physically demanding and involve lifting up to 25 kilograms. For example, kinesiologists may do exercises with patients or have to move or lift patients who cannot exercise alone.

Research activities may involve long hours of studying computer analyses, collecting data and monitoring exercise programs.

Personal Characteristics

Kinesiologists need the following characteristics:

- self-confidence combined with leadership and critical thinking skills
- oral and written communication skills
- patience and flexibility in their relationships with others
- an interest in keeping up-to-date with new technology
- teamwork skills
- an interest in scientific research.

They should enjoy working with people, using equipment and solving problems.

Educational Requirements

Kinesiologists usually have an interdisciplinary background (physiology, anatomy, biomechanics, biomedical engineering, psychology, statistics). The minimum education requirement is a **related four year bachelor's degree**. Many people currently working in the field have a master's degree in physical education.

In Alberta, the following post-secondary institutions offer programs in kinesiology:

- The **University of Alberta** in Edmonton offers a four year degree program in kinesiology. The entrance requirement is an average of 65 to 80 per cent in English 30, Chemistry 30, Math 30 or Pure Math 30, Physics 30, and Biology 30 or Physical Education 30 (five credit). The University of Alberta also offers a four year Bachelor of Physical Education degree program and a related Master of Science (M.Sc.) degree program.
- The **University of Calgary** offers a four year degree program in kinesiology with specializations in biomechanics, athletic therapy, exercise and health physiology, mind sciences in kinesiology, and pedagogy. The entrance requirement is a high school diploma with an average of at least 70 per cent in English 30, Pure Math 30 or Math 31, Chemistry 30, Biology 30 and one of the following: Social Studies 30, Physics 30, Science 30, a 30 level language other than English or a five credit Grade 12 subject (Physics 30 recommended if recommended for biomechanics). The University of Calgary also offers a master's degree program in kinesiology.
- The **University of Lethbridge** offers four year and five year co-operative education bachelor degree programs in exercise science and kinesiology. The entrance requirement is an average of at least 65 per cent in English 30 and three other appropriate 30 level subjects, plus a fifth Grade 12 subject. Chemistry 30 is required for the kinesiology program. Biology 30 and Pure Math 30 (or equivalent) may be required or recommended. The University of Lethbridge also offers a master's degree program in kinesiology.

Post-secondary institutions throughout Alberta offer university transfer programs that allow students to apply up to two years of study toward university bachelor's degree programs. It is the student's responsibility to ensure that the courses they choose to take will be accepted for credit at the institution to which they wish to transfer.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

(section revised JANUARY 2006)

Kinesiologists are employed by:

- government facilities for special needs populations
- athletic equipment companies
- elementary and secondary schools
- rehabilitation and occupational health departments
- sport and fitness centres
- professional and amateur sport organizations
- hospitals and other health service agencies
- post-secondary education institutions
- sport governing bodies.

Some self-employed kinesiologists work on a contract basis for several employers.

Kinesiologists are part of the much larger National Occupational Classification 4167: Recreation, Sports and Fitness Program Supervisors and Consultants. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Public Administration**
- **Health Care and Social Assistance**
- **Information, Culture and Recreation**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 1,300 Albertans are employed in the Recreation, Sports and Fitness Program Supervisors and Consultants occupational group which is expected to grow 2.0 to 3.0 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 20 to 40 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since kinesiologists form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for kinesiologists.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Recreation, Sports and Fitness Program Supervisors and Consultants occupational group working part-time or full-time earned from **$13,700 to $51,500 a year.** The average salary was **$37,100 a year.**

For information about current collective agreements in the public and not-for-profit sectors, see the Health Sciences Association of Alberta (HSAA) website.

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Health Sciences Association of Alberta (HSAA) website: www.hsaa.ca

Related Occupational Profiles

Athletic Therapist
Coach
Ergonomist
Massage Therapist
Physiotherapist
Recreation Co-ordinator/Supervisor
Recreation Therapist
Sport Medicine Physician

Related High School Subjects

Enterprise and Innovation; Language Arts; Management and Marketing; Mathematics; Physical Education; and Science (Biology; Chemistry; and Physics)

Related Post-Secondary Fields of Study

Physical Education and Recreation; and Sciences

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Kitchen Helper and Food Assembler

Produced MARCH 2003

Kitchen helpers and food preparers and assemblers assist cooks in restaurants and institutions by keeping the kitchens clean and by performing a variety of food preparation tasks.

NOC Number(s): 6641.2
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **O M s**

Duties

Kitchen helpers keep the kitchens in food service establishments clean and tidy. In general, they perform the following duties:

- sweep and scrub floors
- remove garbage
- clean kitchen equipment
- scrape food from plates and wash food trays
- stack dishes in dishwashers
- clean flatware
- wash pots and pans
- store clean items.

In some establishments, kitchen helpers also:

- receive and store supplies
- stock cupboards, refrigerators and salad bars
- clean food preparation and storage areas
- assist in basic food preparation.

Food preparers prepare or cook partially prepared foods in restaurants. In general, they:

- prepare ingredients (e.g. wash and slice vegetables)
- partially cook food in advance of orders
- assemble and measure ingredients to fill orders
- package take-out foods
- pass incomplete orders to other workers to finish
- help line cooks prepare food orders.

Food preparers may also:

- bake some items and finish desserts
- clean food preparation and storage areas
- stock refrigerators and salad bars
- let their supervisors know when supplies are getting low or equipment is not working properly.

Sandwich, salad and dessert makers prepare salads, sandwiches and desserts in commercial eating establishments and institutions such as hospitals. In general, they:

- use manual or electric appliances to clean, peel, slice and trim foodstuffs to prepare sandwich fillings and salads, simple jellied salads and desserts such as ice cream and fruit dishes
- portion and wrap the food, or place it directly on plates for service to patrons
- keep records of the quantities of food used
- help other kitchen staff whenever necessary.

Food assemblers often work on assembly lines putting food trays together in hospitals, cafeterias, airline kitchens and similar establishments. In general, they:

- portion food in consistent serving sizes in an appropriate, safe and attractive manner
- use tongs, forks and scoops to remove portions from containers (which may be heated or cooled) and place the food on plates
- add cutlery, napkins, etc. to complete each food tray
- place food trays over food warmers for immediate service, or store them in refrigerated storage cabinets
- deliver food trays and snacks to nursing units or directly to patients
- distribute menus and collect diet sheets.

Working Conditions

Kitchen helpers and food assemblers work shifts and often have to work weekends and holidays. They are on their feet most of their shift and may have to carry trays of food dishes and glassware weighing up to 25 kilograms. They may be exposed to:

- cool temperatures in refrigeration and freezer units
- heat from dishwashing and cooking equipment
- cleaning agents
- noise and slippery flooring (especially near dishwashers).

Kitchen helpers and food assemblers sometimes work under time pressures and must be careful to avoid cuts from sharp utensils and burns from hot appliances.

Personal Characteristics

Kitchen helpers and food assemblers need the following characteristics:

- good health
- high standards of personal hygiene
- a neat and tidy appearance
- an interest in food preparation
- the ability to follow oral and written instructions
- the ability to work effectively as part of a team.

They should enjoy handling food and equipment, having clear rules and methods for their work, and working with people.

Educational Requirements

(section revised OCTOBER 2005)

There are **no minimum education requirements** for kitchen helpers and food assemblers. However, food safety training is a definite asset when looking for employment and related education is generally required for advancement.

In Alberta, food preparation is taught in some high school Career and Technology Studies courses and there is a formal apprenticeship program for cooks (for more information, see the Cook occupational profile). In addition, the following post-secondary programs are designed to help people enter and progress in the field of food preparation:

- **Bow Valley College** in Calary offers a one year Food Service Worker, Level I program. The entrance requirement is a Grade 10 reading level and employment in a food service area or access to a commercial or institutional kitchen or dietary department.
- **Lethbridge Community College** offers a one year Professional Cooking program. The entrance requirement is 65 high school credits (Grade 11) with at least 60 per cent in English 23 and Math 23 or equivalent. Applicants are required to complete a personal medical profile and update immunization prior to entering the program.
- The **Northern Alberta Institute of Technology** in Edmonton offers a one year certificate program in Culinary Arts. The minimum entrance requirement is Grade 10 or equivalent including English and math. However, an average of 65 per cent in Grade 12 English and math may be required to gain admission to this quota program.
- **Portage College** in Lac La Biche offers a 16 week Pre-Employment Cooking certificate program that includes a two-week work placements and prepares students for apprenticeship. Applicants must have at least Grade 9 education or equivalent. Portage College also offers a 33 week Cooking certificate program. The entrance requirement is Grade 10 or equivalent including English and math.

Alberta Tourism Education Council (ATEC) has developed occupational standards for kitchen helpers. ATEC standards define the knowledge and skills necessary to be competent.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

(section revised JANUARY 2006)

Kitchen helpers and food assemblers work in all types of restaurants from fast food outlets and base camps to formal dining rooms, as well as public institutions such as hospitals and nursing homes. Part-time work is common.

Experienced kitchen helpers and food assemblers may advance to assistant cook and cook positions, or to supervisory positions. However, supervisory positions may be limited in number, and advancement is generally easier and faster for those who have a high school diploma and are willing to take further education.

Kitchen helpers and food assemblers are part of the larger National Occupational Classification 6641: Food Counter Attendants, Kitchen Helpers and Related Occupations. In Alberta, over 75 per cent of people employed in this classification work in the **Accommodation and Food Services** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Accommodation and Food Services industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 30,700 Albertans are employed in the Food Counter Attendants, Kitchen Helpers and Related Occupations group which is expected to grow 1.0 to 2.0 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 300 to 620 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since kitchen helpers and food assemblers form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for kitchen helpers and food assemblers.)

There is a fairly high employment turnover rate in this occupation so jobs are available relatively frequently.

Salary

(section revised OCTOBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Food Counter Attendants, Kitchen Helpers and Related Occupations group working part-time or full-time earned from **$9,000 to $39,800 a year.** The average salary was **$13,300 a year.**

Salaries are generally highest in hospitals and nursing homes but advancement prospects are limited (for more information, see the Food Service Supervisor occupational profile).

Other Sources of Information

(section revised OCTOBER 2005)

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo
Alberta Tourism Education Council (ATEC) website: www.atec.ca

Related Occupational Profiles

Food and Beverage Server
Food Service Helper

Related High School Subjects

Foods; and Physical Education

Related Post-Secondary Fields of Study

Personal and Food Services

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Land Agent

Produced APRIL 2005

Land agents negotiate and acquire interests in land for rights of way for well sites, pipelines, powerlines, roads and other surface uses.

NOC Number(s): 1225
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **M D s**

Duties

Licensed land agents negotiate and acquire interest in land. They also may:

- assess environmental controls written into agreements (e.g. to protect wildlife or dispose of hazardous waste)
- acquire freehold mineral leases
- assess and settle damages
- negotiate road use agreements
- act as a link between corporations, government agencies, the agriculture industry and land owners
- investigate the condition of soil and crops
- co-ordinate reclamation activities
- prepare reports and documentation
- testify before regulatory boards.

Working Conditions

Land agents generally work in a field environment and may spend a considerable amount of time travelling in rural areas, in all kinds of weather conditions. Working hours can be erratic depending on the availability of landowners.

Personal Characteristics

Land agents need the following characteristics:

- integrity and high ethical standards
- excellent interpersonal and written communication skills
- negotiation and public relations skills
- good organizational skills
- the ability to work with little supervision.

They should enjoy co-ordinating office and field services, and dealing with people from all walks of life.

Educational Requirements

Employers prefer to hire applicants for entry level land agent positions who:

- have related post-secondary education
- are computer literate
- are Commissioners for Oaths
- have experience in the agriculture industry and the oil and gas industry
- have an Alberta Class 5 driver's licence
- are bondable (acceptable to an insurance company as a responsible, law-abiding person).

To obtain a permanent land agent licence, you must:

- first obtain an interim land agent licence (applicants must be at least 18 years of age and successfully complete an examination)

- successfully complete a distance learning program
- article (train) under a qualified permanent land agent for 12 consecutive months
- submit an evaluation completed by the supervising land agent indicating that all requirements have been met
- successfully complete an examination.

In Alberta, the following post-secondary institutions offer related education programs:

- **Mount Royal College** in Calgary offers a five course foundation certificate program and a four course advanced certificate program in Petroleum Land Contract and Administration through Continuing Education. Applicants for the foundation certificate program must be 18 years of age or older. The entrance requirement for the advanced certificate program is successful completion of the foundation certificate program.
- **Olds College** offers a two year Land Agent diploma program and an eight month Land Administration Certificate program. The entrance requirement for both programs is a high school diploma or equivalent with English Language Arts 30-1 or 30-2 (English 30 or 33), Pure or Applied Math 10 (Math 10 or 13) and one of the following: Science 20, Biology 20 or Chemistry 20.
- The **University of Calgary** offers four year and five year (co-op education) Bachelor of Commerce (B.Comm.) degree programs in petroleum land management. The entrance requirement is a high school diploma or equivalent with at least 70 per cent in English 30, Pure Math 30 and three of the following: Math 31, Social Studies 30, Biology 30, Chemistry 30, Physics 30, Science 30, a 30 level language other than English, one five credit Grade 12 subject.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Other Requirements

(section revised JULY 2005)

Under Alberta's Land Agents Licensing Act, you must be a licensed land agent to act as a Land Agent or call yourself a Land Agent.

Employment and Advancement

(section revised JANUARY 2006)

Land agents work for oil and gas companies, land service companies, engineering firms, pipeline companies, electric and gas utilities, railways, communications companies and government agencies. They may work in a variety of positions:

- surface land agent
- petroleum landman
- land representative
- municipal land agent
- land use technician
- lease negotiator
- right-of-way planner
- liaison co-ordinator
- land management technician
- contract land agent.

Some land agents are self-employed consultants. Work in this occupation may be seasonal.

Advancement opportunities vary depending on the agent's educational qualifications and experience.

Land agents are part of the much larger National Occupational Classification 1225: Purchasing Agents and Officers. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Oil and Gas Extraction**
- **Wholesale Trade**
- **Public Administration**
- **Construction**
- **Metals, Metal Fabrication and Machinery Manufacturing**
- **Other Manufacturing**
- **Professional and Technical Services**
- **Transportation and Warehousing**
- **Health Care and Social Assistance**
- **Wood Products Manufacturing**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

About 3,950 Albertans are employed in the Purchasing Agents and Officers occupational group which is expected to grow 1.9 to 2.9 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 70 to 120 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since land agents form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for land agents.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised AUGUST 2005)

Salaries for land agents can vary greatly depending upon the type of work involved, the individual's background and the employer.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Purchasing Agents and Officers occupational group working part-time or full-time earned from **$19,100 to $129,200 a year.** The average salary was **$51,100 a year.**

Other Sources of Information

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Association of Surface Land Agents (AASLA) website: www.aasla.com

Canadian Association of Petroleum Landmen (CAPL) website: www.landman.ca

Land Agent Licensing website: www.gov.ab.ca/hre/lal

International Right of Way Association (IRWA) website: www.irwaonline.org

Related Occupational Profiles

Land Titles Examiner
Mediator
Real Estate Agent
Real Estate Appraiser

Related High School Subjects

Energy and Mines; Information Processing; Language Arts; Legal Studies; Mathematics; Science (Biology; and Chemistry); Social Studies; and Wildlife

Related Post-Secondary Fields of Study

Business, Management and Administrative Studies

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Land Surveyor

Produced JULY 2004

Land surveyors plan, direct and conduct legal surveys to determine and interpret the location of boundaries, buildings, structures and other natural or human-made features on, over or under the surface of the earth.

NOC Number(s): 2154
Minimum Education: 4 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **I O D**

Duties

Land surveyors use electronic surveying equipment and computer systems to survey land, water and air space. They determine or establish boundaries, or anything relative to a boundary, to identify and certify its location.

Land surveyors and their assistants determine or establish boundaries by:

- searching for previous boundaries in existing survey records
- searching land titles
- conducting field work and preparing plans
- determining the accurate location of a variety of features within a project area
- directing the activities of staff and other professionals.

The information land surveyors gather is used to determine the location, limits and boundaries of:

- rights-of-way for utilities
- road and highway alignments
- well-site locations
- mining claims for resource development
- subdivisions of land
- houses and buildings for construction or sale.

Increasingly, land surveyors are becoming involved in Geographic Information Systems (GIS) and Global Positioning Systems (GPS) work as well.

Working Conditions

Land surveyors work indoors in office environments and outdoors in urban and rural environments. Some lifting (up to 10 kilograms) is required.

Surveyors who have management responsibilities spend most of their time in office environments.

Personal Characteristics

Land surveyors need the following characteristics:

- a strong aptitude for mathematics and computers
- the ability to visualize objects, distances, sizes and other abstract forms
- the ability to work outdoors with precise electronic surveying instruments
- analytical and organizational skills
- the ability to work effectively in a team environment
- an interest in law, history and business administration
- good communication skills.

They should enjoy:

- taking an innovative approach to problems
- using instruments and equipment in a precise, accurate manner
- making decisions and co-ordinating the work of others.

Educational Requirements

Land surveyors need a good understanding of mathematics, physics, earth sciences, computer programming and cartography. The most common educational qualification is a **four year bachelor's degree in geomatics engineering.**

In Alberta, the **University of Calgary** offers a four year Bachelor of Science (B.Sc.) degree program in geomatics engineering. The minimum admission requirement is a high school diploma with an average of at least 70 per cent in English 30, Pure Math 30, Math 31, Chemistry 30 and Physics 30.

Post-secondary institutions throughout the province offer university transfer programs that allow students to apply up to two years of study toward university Bachelor's degree programs. It is the student's responsibility to ensure that the courses they choose to take will be accepted for credit at the institution to which they wish to transfer.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Other Requirements

(section revised OCTOBER 2004)

Under Alberta's Land Surveyors Act, you must be registered with the Alberta Land Surveyors' Association (ALSA) to practice as or use the title Alberta Land Surveyor. If you are not registered with ALSA, you may work in this field only under the supervision, direction and control of an Alberta Land Surveyor.

Employment and Advancement

(section revised JANUARY 2006)

Most land surveyors are employed by surveying and geomatics firms. Some registered Alberta Land Surveyors establish their own surveying companies or become shareholders in existing ones.

Registered Alberta Land Surveyors are part of the larger National Occupational Classification 2154: Land Surveyors. In Alberta, most people employed in this classification work in the **Professional and Technical Services** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Professional and Technical Services industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 1,850 Albertans are employed in the Land Surveyors occupational group which is expected to grow 1.3 to 2.3 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 20 to 50 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since registered Alberta Land Surveyors form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for registered Alberta Land Surveyors. There are about 300 registered Alberta Land Surveyors in the province.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised SEPTEMBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Land Surveyors occupational group working part-time or full-time earned from **$18,100 to $139,300 a year.** The average salary was **$54,500 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Land Surveyors' Association (ALSA) website: www.alsa.ab.ca

Association of Canada Lands Surveyors (ACLS) website: www.acls-aatc.ca

Construction Sector Council website: www.csc-ca.org

Western Canadian Board of Examiners (WCBE) website: www.acls-aatc.ca/ENGLISH/candidates/wcbels.htm

Related Occupational Profiles

Geomatics/Surveying Engineer
Geomatics/Surveying Technologist
Mapping Technologist
Urban, Regional and Park Planners

Related High School Subjects

Energy and Mines; Information Processing; Language Arts; Mathematics; Physical Education; Science (Chemistry; and Physics); and Social Studies

Related Post-Secondary Fields of Study

Engineering and Science Technologies; and Engineering, Architecture and Related Studies

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For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Land Titles Examiner

Produced MAY 2003

Land titles examiners examine land-related documents as they are presented to the land titles office for registration.

NOC Number(s): 4211.1
Minimum Education: High school diploma
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **M S I**

Duties

In general, land titles examiners:

- determine whether or not land-related documents can be registered under the provisions of the Land Titles Act and other legislation
- determine whether transfers, mortgages, caveats, liens, transmissions, leases, writs, easements and other documents conform to the appropriate legislation and make sure that all other requ red documents are either on record or accompany the document to be registered
- accept documents for registration and assess the appropriate fees, or prepare a rejection notice explaining why the documents are not acceptable
- ensure that all the appropriate data is entered to create new title records or update existing ones.

Some duties are repetitive but all of the above duties carry responsibility.

Working Conditions

Land titles examiners use computers and the Alberta Land Titles Automation System. They work 36 and one quarter hours a week, Monday through Friday, in busy office surroundings.

Personal Characteristics

Land titles examiners need the following characteristics:

- the analytical skills required to pick out the pertinent facts and reach accurate conclusions
- the ability to work independently, referring only unusual cases to supervisors for a decision
- a strong sense of responsibility and thorough attention to detail because items of record missed in an examination may mean a heavy loss to a client or the Land Titles Assurance Fund
- the ability to communicate effectively when contacting law offices regarding corrections and procedures.

They should enjoy work that is secure, follows a predictable routine and requires a high degree of accuracy.

Educational Requirements

The qualification required to become a land titles examiner is a **high school diploma supplemented by experience** examining documents for adherence to legislated requirements or related land experience. Education or training in paralegal studies is a definite asset (see the Paralegal occupational profile for information about related training programs).

Employment and Advancement

Land titles examiners are hired through an internship program that includes a comprehensive training and development period. Interns are expected to gain an understanding of the effects of legal documents, exercise sound judgement and display a high level of accuracy and decision-making ability. Examiners are stationed in regional land titles offices located in Edmonton and Calgary.

This occupation has three levels of responsibility. In Level 1, the entry level, successful interns are given further training on the job and are subsequently enrolled in an in-house intermediate paralegal training program that consists of about 20 hours of classroom instruction spread over several weeks.

Land titles examiners remain at Level 1 for a minimum of two years. At that point, provided they have successfully completed the training program and their job performance is satisfactory, they may be promoted to Level 2, the full working level. At Level 2, they are eligible to enroll in an advanced paralegal training program in which they study cases related to land titles.

After a minimum of three years in Level 2 and completion of the advanced training program, land titles examiners may progress to Level 3, the advanced working level. Advancement opportunities beyond this level are limited.

Salary

(section revised OCTOBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Paralegal and Related Occupations group working part-time or full-time earned from **$17,400 to $113,600 a year**. The average salary was **$37,000 a year**. Public sector salaries do not range as high as those in the private sector.

Related Occupational Profiles

Judicial Clerk
Land Agent
Paralegal

Related High School Subjects

Information Processing; Language Arts; Legal Studies; and Mathematics

Related Post-Secondary Fields of Study

Clerical and Administrative Support

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Landscape Architect

Produced MARCH 2005

Landscape architects combine artistic and creative perspectives with scientific and engineering knowledge to create, manage and conserve environments that are both functional and attractive. Their goal is to create harmony between natural environments, land features and architectural structures.

NOC Number(s): 2152
Minimum Education: 4 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **I S D**

Duties

Landscape architects may plan and design:

- urban, regional and provincial parks
- industrial sites and business parks
- conservation areas
- resorts, playgrounds, marinas, golf courses or other recreation areas
- residential communities
- urban redevelopments
- private gardens and estates
- cemeteries
- grounds for hospitals, schools, airports and other public areas
- private health and institutional sites
- plazas and commercial areas
- rooftop landscapes
- interior landscaping for open spaces in plazas, shopping malls and large buildings
- storm water management facilities
- streetscapes and scenic parkways.

They may be involved in:

- programming for park and public projects and tourist developments
- developing sites related to residential, recreational, institutional, commercial or industrial projects
- conducting public consultations
- managing specific regional areas where they may plan forests, parks and recreational areas
- monitoring the development of natural agricultural lands
- overseeing the restoration, reclamation or conservation of gravel pits, mining areas, land fills and environmentally sensitive areas
- preparing environmental assessments
- assessing aesthetic and quality of life parameters
- providing landscape inventory, and analysis processes and programs.

Landscape architects incorporate elements found in the natural environment (water, rocks, trees, flowers, plants, etc.) and the building industry into their designs. Their work not only contributes to the beauty of the environment but attempts to preserve the natural ecology of an area and reduce the environmental impact of urban, industrial, recreational and other development.

Landscape architects often work as part of a team with:

- architects
- urban planners
- consulting engineers
- building contractors

- scientists (particularly when conservation or reclamation is involved).

In general, they:

- co-ordinate the work of project teams
- meet frequently with clients and the public at large to determine needs, preferences, development feasibility and financial resources available for projects
- study sites, thoroughly observing and mapping out the grade and direction of land slopes, structure and stability of the soil, drainage patterns, and presence of existing structures, vegetation and landforms
- develop site plans which address the various social, economic, physical and artistic areas of concern
- prepare physical form drawings and plans for consideration
- prepare reports and cost estimates, and present them to clients for review and approval
- develop final detailed plans and materials lists
- prepare contract documents and review tenders
- inspect construction of the design.

Landscape architects are usually involved in a number of different projects at once, each at a different stage of development and requiring a different level of involvement.

Working Conditions

Much of the time, landscape architects work in comfortable office surroundings. They also spend a considerable amount of time walking/hiking on work sites, assessing or inspecting construction. Travel, working long hours and dealing with the stress of meeting deadlines are also part of the job.

Personal Characteristics

People interested in working in landscape architecture should have:

- imagination and creativity
- a keen interest in art, design, landscapes and the intrinsic qualities of built and natural environments
- some ability in the visual arts
- an interest in construction
- an interest in and a sensitivity to people's needs, particularly in urban environments
- the ability to work independently and with people.

They should enjoy synthesizing information and finding innovative solutions to problems, working with people at tasks requiring precision, and supervising the work of others.

Educational Requirements

The minimum educational qualification required to work as a landscape architect is **a bachelor's degree in landscape architecture** from a university with a recognized program of studies. Landscape architects interested in operating their own businesses also need business skills.

In Canada, only the **University of Guelph** offers training at the bachelor's level. The entrance requirement is a high school diploma with English 30 and Pure Math 30, or equivalent. Competition for admission is keen.

The following universities offer master's degree programs in landscape architecture:

- **University of British Columbia**
- **University of Guelph**
- **University of Manitoba**
- **University of Toronto**.

Admission to a master's degree program requires a bachelor's degree with an average sufficient for entry into graduate studies.

For current information about programs and admission requirements, please check post-secondary calendars or websites.

Other Requirements

In Alberta, landscape architects must practice for at least three years and pass an exam before they are eligible for professional membership in the Alberta Association of Landscape Architects (AALA).

Employment and Advancement

(section revised JANUARY 2006)

Many newly-qualified landscape architects begin working for established landscape architectural consulting firms under the supervision of a registered landscape architect. Landscape architects also are employed by:

- planning, engineering and architectural firms
- large real estate developers or building contractors
- federal, provincial and municipal government departments concerned with urban planning, parks and recreation, transportation, tourism, environment and public works.

After a number of years' experience and registration with the AALA, many landscape architects open their own businesses or advance to management positions.

In Alberta, over 75 per cent of people employed as landscape architects work in the following industries:

- **Professional and Technical Services**
- **Construction**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 200 Albertans are employed in the Landscape Architects occupational group which is expected to grow 1.5 to 2.5 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised SEPTEMBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Landscape Architects occupational group working part-time or full-time earned from **$33,100 to $104,000 a year.** The average salary was **$62,100 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

Alberta Association of Landscape Architects (AALA) website: www.aala.ab.ca

Canadian Society of Landscape Architects (CSLA) website: www.csla.ca

Construction Sector Council website: www.csc-ca.org

Related Occupational Profiles

Architect
Environmental Engineer
Landscape Architectural Technologist
Urban, Regional and Park Planners

Related High School Subjects

Agriculture; Construction Technologies; Design Studies; Fine Arts (Visual Arts); Information Processing; Language Arts; Management and Marketing; Mathematics; Science (Biology; and Physics); Social Studies; and Wildlife

Related Post-Secondary Fields of Study

Engineering, Architecture and Related Studies

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Landscape Architectural Technologist

Produced MARCH 2005

Landscape architectural technologists assist landscape architects, architects, and other professional designers and planners in designing and developing outside and inside environments. Projects may range from assisting in planning public parks to developing inner courtyard spaces in shopping malls.

NOC Number(s): 2225.4
Minimum Education: 2 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **O M D**

Duties

Landscape architectural technologists are usually involved in the technical aspects of residential, industrial, commercial and recreational designs. In general, they:

- draft plans
- prepare graphic presentation drawings and perspectives
- prepare computer-assisted technical drawings
- construct models
- draft construction-drawing packages that include grading, planting, irrigation, layout and preparation details
- estimate project costs
- inspect construction
- write contracts
- assemble specifications
- help select plant materials, furnishings and surfacing materials
- consult with clients
- provide graphics for marketing brochures and portfolios.

Initially, designs and plans are prepared by landscape architects and must be sketched and drafted for presentation to and approval by the client. Sometimes scale models are constructed to give the client a better picture of the proposed project.

Working Conditions

Most landscape architectural technologists work indoors in an office environment and outdoors on construction sites. They usually work standard office hours but overtime may be required to meet project deadlines.

Personal Characteristics

Landscape architectural technologists need the following characteristics:

- good communication skills (including listening and writing skills)
- creativity
- the ability to do precise work
- an interest in the development of natural and created environments
- the ability to think three-dimensionally and visualize spatial relationships
- sensitivity to the needs of people and their relationship with their environment
- the ability to work effectively in a team environment.

They should enjoy working with instruments and equipment at tasks requiring precision, analyzing information and taking a methodical approach to their work, and assisting landscape architects.

Educational Requirements

Landscape architectural technologists need broad technical knowledge combined with an understanding of the aesthetic and functional aspects of natural and ornamental landscapes.

The **Northern Alberta Institute of Technology (NAIT)** in Edmonton offers the only two year Architectural Technology diploma program in Alberta that has a specialization in landscape architecture. The entrance requirement is a high school diploma with English 30 or 33, Pure Math 30 (or at least 60 per cent in Applied Math 30) and one of the following: Physics 30 (recommended), Chemistry 30, Biology 30 or Science 30.

Normal colour vision is required. This is a quota program so higher marks may be required to gain admission. Part of the program is available through Continuing Education. For current information about the program and mature student admission, please check the NAIT calendar or website.

Other Requirements

Certification is voluntary. NAIT program graduates may join the Alberta Association of Landscape Architects as Landscape Architectural Technology (LAT) members.

Employment and Advancement

(section revised JANUARY 2006)

Landscape architectural technologists work for:

- architectural and landscape architectural firms
- parks and recreation offices
- landscaping contractors and supply companies
- greenhouses and nurseries
- golf course design companies.

With additional education, experienced landscape architectural technologists may obtain certification in specific areas such a irrigation design or contract administration. Some experienced technologists establish their own businesses.

Landscape architectural technologists are part of the larger National Occupational Classification 2225: Landscape and Horticultural Technicians and Specialists. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Management, Administrative and Other Support Services**
- **Professional and Technical Services**
- **Agriculture**
- **Information, Culture and Recreation**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

About 1,050 Albertans are employed in the Landscape and Horticultural Technicians and Specialists occupational group which is expected to grow 1.5 to 2.5 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 10 to 30 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since landscape architectural technologists form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for landscape architectural technologists.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised SEPTEMBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Landscape and Horticultural Technicians and Specialists occupational group working part-time or full-time earned from **$14,600 to $83,100 a year.** The average salary was **$39,900 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Association of Landscape Architects (AALA) website: www.aala.ab.ca

Canadian Society of Landscape Architects (CSLA) website: www.csla.ca

Construction Sector Council website: www.csc-ca.org

Related Occupational Profiles

Arborist
Architectural Technologist
Greenhouse Operator
Landscape Architect
Landscape Gardener
Nursery Operator
Turfgrass Management Specialist

Related High School Subjects

Agriculture; Design Studies; Fine Arts (Visual Arts); Information Processing; Language Arts; Mathematics; and Science (Physics)

Related Post-Secondary Fields of Study

Engineering and Science Technologies

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Landscape Gardener

Apprenticeship and Industry Training

Produced FEBRUARY 2006

Landscape gardeners work with other trades to carry out landscaping operations and design in a variety of environments. These environments include residential, commercial and public grounds, playgrounds, golf courses, garden centres, tree nurseries, greenhouses and interior landscapes.

NOC Number(s): 2225.5
Minimum Education: Apprenticeship Trade - Grade 9
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **O M D**

Duties

Landscape gardeners work with machinery and equipment ranging from simple hand tools such as pruning shears and sprayers to heavy duty trucks, tractors, loaders and graders. They may be responsible for the routine maintenance of equipment.

Since landscape gardeners also work with pesticides and fertilizers, they must be aware of government regulations restricting their use and the toxic or hazardous effects the chemicals may have.

They may supervise or be involved in any combination of the following activities:

- consult with clients on all aspects of landscaping
- create landscape designs
- provide advice to customers on plant selection and care
- prepare the ground for planting
- amend poor soil conditions
- identify, plant and transplant greenhouse and nursery stock
- identify, plant, transplant and maintain flowers and ground covers
- install rock gardens, ponds, decks, drainage systems, retaining walls, fences, planters or playground equipment
- seed and sod lawns
- care for established lawns
- trim and prune hedges, trees and shrubs
- identify plant diseases and insect problems
- apply fertilizers and pesticides
- install, operate and maintain irrigation systems
- work in all aspects of greenhouse and nursery production.

Landscape gardeners work with machinery and equipment ranging from simple hand tools such as pruning shears and sprayers to heavy duty trucks, tractors, loaders and graders. They may be responsible for the routine maintenance of equipment.

Since landscape gardeners also work with pesticides and fertilizers, they must be aware of government regulations restricting their use and the toxic or hazardous effects the chemicals may have.

Working Conditions

Most of the work is performed outdoors, although some indoor work may be involved in the greenhouse production and sale of nursery stock, landscape materials, supplies and interior plantscape maintenance. The work can be strenuous and may involve considerable lifting, carrying and bending. Other activities may include design, consulting and day-to-day business operations.

Landscape gardeners may be required to lift items weighing over 25 kilograms.

Personal Characteristics

Landscape gardeners need the following characteristics:

- physical strength and stamina
- the ability to work in all kinds of weather
- good customer service skills.

They should enjoy working with plants and expressing their creativity.

Educational Requirements

Many landscape gardeners begin as general garden workers.

To work in Alberta, landscape gardeners must be ONE of the following:

- registered apprentices
- certified journeymen
- working for an employer who is satisfied that they have the skills and knowledge expected of certified journeymen
- self-employed.

To **register** with **Alberta Apprenticeship and Industry Training**, apprentices must:

- have at least an Alberta Grade 9 education (or equivalent) or pass an entrance exam
- find a suitable employer who is willing to hire and train an apprentice. Most employers prefer to hire high school graduates and may select apprentices from among their current employees..

The **term of apprenticeship** is four years (four 12-month periods) that include a minimum of 1,200 hours of on-the-job training and eight weeks of technical training each year. High school students can become apprentices and gain credits toward apprenticeship training and a high school diploma at the same time through the Registered Apprenticeship Program (RAP).

Applicants who have related training or work experience may be eligible for credit or certification.

Technical training is arranged by Alberta Apprenticeship and Industry Training and is currently offered at Olds College.

Landscape gardeners who will be working with pesticides must obtain a Landscape Alberta Pesticide Applicator Certificate from the Pesticides Program - Land Branch of Alberta Environment.

Pre-employment programs for prospective apprentices and continuing education programs for journeymen may be offered on an as needed basis by the institution(s) listed above or other schools.

For information about other related programs, see the Landscape Architectural Technologist, Landscape Architect, Arborist, Agrologist, Greenhouse Operator, Nursery Operator and Turfgrass Management Specialist occupational profiles.

Employment and Advancement

Landscape gardeners may be employed by landscape architects, contractors, nurseries and tree farms, greenhouses, cemeteries, governments, garden centres and landscape supply outlets.

Beginning landscape gardeners often enter the occupation during the busy summer months as labourers or apprentices.

Experienced landscape gardeners may advance to supervisor, manager or head landscape gardener positions, or own and operate a business. Alberta certified journeyman landscape gardeners who have the supervisory or management skills required by industry may apply for an Achievement in Business Competencies Blue Seal by contacting Alberta Apprenticeship and Industry Training.

Landscape gardeners are part of the larger National Occupational Classification 2225: Landscape and Horticultural Technicians and Specialists. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Management, Administrative and Other Support Services**
- **Professional and Technical Services**
- **Agriculture**
- **Information, Culture and Recreation**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- time of year (for seasonal jobs)
- trends and **events** affecting overall employment (especially in the industries listed above)

- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

About 1,050 Albertans are employed in the Landscape and Horticultural Technicians and Specialists occupational group which is expected to grow 1.5 to 2.5 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 10 to 30 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since landscape gardeners form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for landscape gardeners.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Apprentice landscape gardeners earn at least 60 per cent of the journeyman wage rate in their place of employment in the first year, 70 per cent in the second, 80 per cent in the third and 90 per cent in the fourth. According to the Alberta Provincial Apprenticeship Committee for this trade, journeyman wage rates vary, but generally range from **$16 to $27 an hour plus benefits** (2004 estimate).

According to the **2005 Alberta Wage and Salary Survey**, part-time or full-time starting salaries for Albertans working in the Landscape Gardeners occupational group ranged from **$14,200 to $32,400 a year.** The average salary was **$38,800 a year.**

Other Sources of Information

Alberta Apprenticeship and Industry Training website: www.tradesecrets.org

Construction Sector Council website: www.csc-ca.org

Related Occupational Profiles

Arborist
Greenhouse Operator
Landscape Architectural Technologist
Market Gardener
Nursery Operator
Turfgrass Management Specialist

Related High School Subjects

Agriculture; Construction Technologies; Design Studies; Mechanics; Physical Education; and Science (Chemistry)

Related Post-Secondary Fields of Study

Trades, Industrial and Related Training

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Lather-Interior Systems Mechanic

Apprenticeship and Industry Training

Produced FEBRUARY 2006

Lather-interior systems mechanics assemble and install the frameworks for gypsum materials in buildings.

NOC Number(s): 7284.3
Minimum Education: Apprenticeship Trade - Grade 9
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **M O I**

Duties

Duties vary from one position to the another but, in general, lather-interior systems mechanics (lathers):

- read blueprints and examine the existing structure to decide how to proceed with the project
- erect metal or wood frameworks for walls, partitions, ceiling systems and ornamental shapes
- apply gypsum lath, metal lath and stucco wire to install items such as metal door and window frames, access doors, wall insulation and demountable partitions (used in most commercial office spaces)
- cut openings in lath for heating and ventilation piping, ducts and electrical outlets
- install corner beads and wire mesh around beams to which plaster is to be applied
- may install acoustical tile, hangers for suspended ceilings or metal studs for composition wallboard or lath.

Working Conditions

Lathers usually work indoors, sometimes on ladders or scaffolds. Most are employed in urban areas where there is enough work to keep them employed full-time. In rural areas, the work normally done by lathers may be done by carpenters. Lathers work year round, 40 hours a week except when overtime is required to meet construction deadlines. There is some risk of injury due to falling or other construction site hazards.

Lathers may be required to lift items weighing over 25 kilograms.

Personal Characteristics

Lathers need the following characteristics:

- good hand-eye coordination
- the ability to pay careful attention to detail
- the ability to work well independently or with others.

They should enjoy doing precision work that sometimes requires creativity.

Educational Requirements

To work in Alberta, lathers must be ONE of the following:

- registered apprentices
- certified journeymen
- working for an employer who is satisfied that they have the skills and knowledge expected of certified journeymen
- self-employed.

To **register** with **Alberta Apprenticeship and Industry Training**, apprentices must:

- have at least an Alberta Grade 9 education (or equivalent) or pass an entrance exam
- find a suitable employer who is willing to hire and train an apprentice. Most employers prefer to hire high school graduates and may select apprentices from among their current employees.

The **term of apprenticeship** is three years (three 12-month periods) that include a minimum of 1,560 hours of on-the-job training and eight weeks of technical training in the first year, a minimum of 1,620 hours of on-the-job training and six weeks of technical training in the second and a minimum of 1,560 hours of on-the-job training and eight weeks of technical training in the third. High school students can become apprentices and gain credits toward apprenticeship training and a high school diploma at the same time through the Registered Apprenticeship Program (RAP).

Applicants who have related training or work experience may be eligible for credit or certification.

Lather apprentices may attempt the Interprovincial Exam in the final period of their apprenticeship training and, if successful, are granted a Red Seal (which is recognized in most parts of Canada).

Technical training is arranged by Alberta Apprenticeship and Industry Training and is currently offered at the Northern Alberta Institute of Technology (NAIT) in Edmonton and by mobile delivery in Calgary.

Pre-employment programs for prospective apprentices and continuing education programs for journeymen may be offered on an as needed basis by the institution(s) listed above or other schools.

Employment and Advancement

Lathers are usually employed by contractors in the construction industry. Some are self-employed and contract their services for smaller jobs.

Experienced lathers may specialize in working with a particular type of lath, become estimators or advance to supervisory positions. Alberta certified journeyman lathers who have the supervisory or management skills required by industry may apply for an Achievement in Business Competencies Blue Seal by contacting Alberta Apprenticeship and Industry Training.

Lathers are part of the larger National Occupational Classification 7284: Plasterers, Drywall Installers and Finishers and Lathers. In Alberta, most people employed in this classification work in the **Construction** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Construction industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 5,450 Albertans are employed in the Plasterers, Drywall Installers and Finishers and Lathers occupational group which is expected to grow 1.8 to 2.8 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 90 to 160 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since lathers form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for lathers.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Apprentice lathers earn at least 55 per cent of the journeyman wage rate in their place of employment in the first year, 70 per cent in the second and 80 per cent in the third. According to the Alberta Provincial Apprenticeship Committee for this trade, journeyman wage rates vary, but generally range from **$21 to $25 an hour plus benefits** (2004 estimate).

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Lathers occupational group working part-time or full-time earned from **$26,500 to $72,700 a year.** The average salary was **$59,500 a year.**

Other Sources of Information

Alberta Apprenticeship and Industry Training website: www.tradesecrets.org

Alberta Construction Industry "Trade Up!" website: www.careersconstruction.com

Alberta Wall and Ceiling Bureau website: www.awcbedmonton.com

Calgary Construction Association website: www.cca.cc

Construction Sector Council website: www.csc-ca.org

Related Occupational Profiles

Bricklayer
Concrete Finisher
Floorcovering Installer
Glazier
Insulator
Painter and Decorator
Plasterer
Tilesetter

Related High School Subjects

Construction Technologies; Design Studies; and Physical Education

Related Post-Secondary Fields of Study

Trades, Industrial and Related Training

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Lawyer

Produced NOVEMBER 2005

Lawyers study and interpret points of law to advise clients of their rights and legal obligations, and represent client interests in legal transactions and proceedings.

NOC Number(s): 4112
Minimum Education: 6 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **M I D**

Duties

Lawyer advise clients on legal matters, represent clients before administration boards and draw up legal documents such as contracts and wills. They also plead cases, represent clients before tribunals and conduct prosecutions in courts of law.

Legal practice may be roughly divided into two types: court work and office work. In Canada, when lawyers have completed their training, they are called Barristers and Solicitors because they are eligible to do both. Most lawyers, particularly in small practices, do some court work.

Barristers (court work practitioners) act as advocates for their clients in both criminal and civil law suits. Criminal law involves breaches of the Criminal Code of Canada (e.g. arson, theft, murder) or violations of other statutes (e.g. the Controlled Drug and Substances Act, Young Offenders Act). Civil cases involve non-criminal actions and are often settled out of court. For example, civil cases include:

- personal injury law suits
- family and divorce actions
- contract law suits
- employment and labour disputes
- estates
- intellectual property disputes.

In general, barristers acting on behalf of clients:

- research legislation, legal precedents and case law
- gather evidence (interview witnesses, review documents)
- advise clients, initiate legal actions and draft pleadings
- present a client's case or defence in court or before a tribunal, board, mediator or arbitrator
- negotiate settlements
- may act as a mediator, conciliator or arbitrator.

Litigators are barristers engaged in civil work.

Prosecutors are barristers for the Crown who:

- research legislation, legal precedents and case law
- assemble and analyze evidence gathered by police
- advise police regarding charges and keep crime victims informed about legal procedings
- prosecute criminal cases in court.

Solicitors (office work lawyers) deal with those areas which generally do not require courtroom appearances such as real estate transactions, corporate law, commercial law, administrative law, patents, probate and administration of estates, international law and some aspects of family law.

In general, solicitors:

- act as advisors in legal transactions
- draft legal documents such as wills and business contracts
- handle the transfer of property
- administer estates

- incorporate companies
- negotiate deals
- act as executors, trustees or guardians in estate and family law matters
- act as trade-mark or patent agents.

Lawyers and articling students are **notary publics** under the Notaries Public Act (Alberta). A notary public may:

- administer oaths and take affidavits, affirmations and declarations
- draw, pass, keep and issue deeds, contracts, charter parties and other mercantile transactions in Alberta
- attest (show that something is true and valid) commercial instruments.

Lawyers and articling students also are **commissioners of oaths** under the Commissioner of Oaths Act (Alberta). They may administer oaths and take and receive affidavits, declarations and affirmations in Alberta.

Working Conditions

Legal work can be very demanding and stressful. Lawyers may spend many hours outside the normal working day drafting briefs, researching cases and generally keeping informed about new developments in the legal profession. They usually work as partners or associates in law offices and employ one or more staff members to assist them with their work.

Other working conditions depend on factors such as size and type of law firm. For example:

- **criminal lawyers** may, if required, spend time conferring with clients who are being detained in remand centres or prisons.
- **practitioners in international, corporation or taxation law** work closely with government officials and professionals such as accountants, economists and business executives.
- **family law lawyers** meet with families in the course of adoption or child custody proceedings.
- **labour lawyers** sometimes visit work sites to investigate working conditions or labour disputes.

Personal Characteristics

Lawyers need the following characteristics:

- the physical and emotional stamina required to cope with periods of stress
- a sense of public responsibility and a strong code of ethics
- the ability to communicate persuasively and promote their services
- the ability to think logically and analytically and respond quickly
- organizational skills and the ability to balance career demands and outside interests
- a high tolerance for confrontation and conflict
- tact and patience in dealing with clients
- an excellent memory.

They should enjoy co-ordinating information, negotiating settlements and advising clients.

Educational Requirements

To practice law in Alberta, lawyers must have completed three stages of post-secondary education and training requiring a total of **six to eight years of study**.

The **first stage** is two to four years in an undergraduate (bachelor's) degree program. Undergraduate degree programs and university transfer programs are offered by post-secondary institutions throughout Alberta. In general, the admission requirement for undergraduate programs is a high school diploma with a competitive average (ranging from 60 to 80 per cent depending on the program) in English Language Arts 30-1 (or English 30) and four other approved or specified 30 level courses (e.g. social studies, math or a second language other than English, sciences).

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Students seeking admission to law school must write the Law School Admission Test (LSAT), an aptitude test administered four times a year at a number of Canadian campuses.

The **second stage** is a three year Bachelor of Laws (LLB) degree from an accredited law school. Admission to law school is based on the Faculty of Law's assessment of the applicant's academic record, LSAT score and general qualifications. The minimum academic requirement is completion of at least two years of a program leading to a bachelor's degree or equivalent, but admission after two or three years of undergraduate study is very unusual. A bachelor's degree is

generally required to gain admission.

The **University of Alberta** in Edmonton offers

- an LLB degree program. This is a quota program in which a number of places are reserved for mature and indigenous students.
- a combined Master of Business Administration and Bachelor of Laws (MBA/ LLB) degree program. In addition to the entrance requirements described above, admission to these programs requires successful completion of the Graduate Management Admission Test (GMAT).
- a Master of Laws (LLM) program and a postgraduate diploma program. The entrance requirement for both programs is a law degree from a recognized university. The postgraduate program requires at least two years of experience in law practice or a related field. See the University of Alberta calendar for information about additional entrance requirements.

The **University of Calgary** offers:

- an LLB degree program. In addition to the entrance requirements described above, the applicant's maturity, work experience and community involvement are considered.
- combined MBA/LLB and Master of Environmental Design (Environmental Science)/LLB degree programs.
- an LLM program in natural resources and environmental law. The entrance requirement is an LLB degree from a recognized university.

The **University of Saskatchewan** in Saskatoon offers a special law program for aboriginal people. For more information, contact the Legal Studies for Native People program, located at the Native Law Centre, University of Saskatchewan.

The **third stage** of education and training for lawyers is called **articling**. After prospective lawyers graduate from an LLB or combined degree program, they must work for one full year as a student-at-law. This is a form of apprenticeship in which the student enters into an agreement (articles of clerkship) with a practitioner of the Alberta Bar, to provide the graduate with practical training in both barrister's and solicitor's work. Most articling students are paid a modest salary.

It is the responsibility of the law graduate to obtain an articling position. A graduate's ability to secure an articling position depends on a number of factors including the level of economic activity in the province and the graduate's grades and related experience.

Articling students must attend and successfully complete the CPLED program (Canadian Centre for Professional Legal Education) which is offered twice a year and covers many practical aspects of the law. This six month bar admission program includes classroom sessions and online learning.

Other Requirements

Under Alberta's Legal Profession Act, you must be registered member of the Law Society of Alberta (LSA) to practice law in Alberta or call yourself a Lawyer.

Employment and Advancement

(section revised JANUARY 2006)

Lawyers may be self-employed, or employed by businesses or federal, provincial or municipal governments. In the past, most lawyers started their careers in private practice, either as members of firms or on their own. Today, a growing number of graduates are pursuing alternate careers working for government, business, industry, nonprofit groups or post-secondary institutions.

Lawyers in private practice sometimes become senior partners in their firms. A few are appointed to the Bench or to administrative tribunals. Government legal advisors may advance to positions as department heads or diplomats, and corporate lawyers may become company executives. Lawyers also may combine their training in law with other professional training e.g. in arbitration, mediation, medicine, business, library studies or political science.

Lawyers are part of the larger National Occupational Classification 4112: Lawyers and Quebec Notaries. In Alberta, over 75 per cent of people employed in this classification work in the **Professional and Technical Services** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Professional and Technical Services industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)

- **size of the occupation.**

Over 10,050 Albertans are employed in the Lawyers and Quebec Notaries occupational group which is expected to grow 1.6 to 2.6 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 160 to 270 **new** positions will be created each year **in addition** to job openings created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Incomes in private practice vary tremendously depending on the firm's ability to attract and maintain clients.

According to the **2005 Alberta Wage and Salary Survey**, Albertans with three years of experience working part-time or full-time in the Lawyers and Quebec Notaries occupational group earned from **$38,500 to $180,400 a year.** The average salary was **$87,900 a year**.

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Law Society of Alberta website: www.lawsocietyalberta.com

Legal Education Society of Alberta website: www.lesa.org/CPLED

Related Occupational Profiles

Arbitrator
Canadian Forces Personnel - Commissioned Officer
Judge
Mediator
Paralegal
Political Scientist

Related High School Subjects

Language Arts; Legal Studies; Management and Marketing; Physical Education; Science; and Social Studies

Related Post-Secondary Fields of Study

Social Sciences, Law and Religious Studies

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Legal and Realtime Reporter

Produced OCTOBER 2005

Legal and realtime reporters write machine shorthand at a minimum speed of 225 words per minute to capture every word spoken in a variety of settings. Computer technology instantly translates shorthand notes into English text that can be displayed or printed.

NOC Number(s): 1244.1
Minimum Education: 2 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **M O i**

Duties

Duties and specific tasks vary depending on the reporter's specialization.

Legal (court) reporters produce verbatim transcripts of Court of Queen's Bench proceedings, quasi-judicial proceedings, boards of inquiry, public hearings and pre-trial civil proceedings.

Realtime reporters provide instantaneous translation of shorthand notes into English text displayed on computer monitors or large projector screens. They may subsequently prepare transcripts. Realtime reporters usually work in live settings such as video or cyber conferences, government hearings or debates, live television broadcasts or post-secondary classrooms. There are two types of realtime reporters:

- **CART (Communication Access Realtime Translation) reporters** specialize in providing services in business and education settings for the deaf and hard of hearing. For example, they may provide an instant transcript of a lecture on a notebook computer screen and a paper or disk copy at the end of class.
- **Captioners** specialize in providing closed captioning for live television broadcasts.

Working Conditions

Most legal and realtime reporters work in urban environments where they may work in settings such as boardrooms, conference rooms, courts, classrooms, business or community settings. Many have home offices.

Reporters may be expected to sit for two or three hours at a time and maintain their concentration throughout. Depending on the nature of the proceedings they report, they may be required to work in challenging circumstances.

Personal Characteristics

Legal and realtime reporters need the following characteristics:

- excellent communication skills in English including an extensive vocabulary
- a good knowledge of current events and the world around them
- an interest in law and computers
- the ability to be discreet with respect to the information available to them through their work
- good interpersonal skills and a courteous, tactful manner with people who are not familiar with legal proceedings
- the physical and mental stamina required to work long hours and maintain a high standard of work
- strong powers of concentration and quick reactions
- the flexibility required to adapt to last minute changes
- excellent hearing and good vision (to be able to correctly report and read back their notes)
- an interest in learning about diverse topics and new technology.

They should enjoy:

- working at tasks governed by clear rules and guidelines with minimal direction or supervision from others
- operating machines such as computers and computerized shorthand equipment
- doing work that requires a high degree of accuracy in a limited time.

Educational Requirements

The **Alberta Shorthand Reporters Association (ASRA)** recommends that prospective legal and realtime reporters take their training in a program approved by the National Court Reporters Association (NCRA). Students training to become legal and realtime reporters should study computer compatible machine shorthand theory. Legal, computing or related business experience is an asset.

The **Northern Alberta Institute of Technology (NAIT)** in Edmonton offers a two year Legal and Realtime Reporting diploma program approved by the NCRA. The entrance requirement is a high school diploma or equivalent with Grade 12 English, science and social studies courses. Applicants must have a typing speed of 30 net words per minute.

For current information about the program and NAIT's mature student admission policies, please check the NAIT calendar or website.

Ongoing professional development is required to maintain certification with ASRA and NCRA: 30 Continuing Education Credits and 3 Continuing Education Units every three years. ASRA recognizes NCRA Continuing Education Units and will convert them into ASRA Continuing Education Credits.

Other Requirements

Certified Shorthand Reporter is a protected title under Alberta's Professional and Occupational Associations Registration Act. This means that to call yourself a Certified Shorthand Reporter, you must be a registered member of the Alberta Shorthand Reporters Association (ASRA). You do **not** have to be registered if you do not call yourself a Certified Shorthand Reporter.

Employment and Advancement

(section revised JANUARY 2006)

Most legal and realtime reporters work for private reporting companies or are self-employed. Some are federal or provincial government employees. Those employed by the provincial government work in the Court of Queen's Bench.

There is a growing demand for CART reporters and broadcast captioners. Demand for broadcast captioners has been boosted by the Canadian Radio-Television and Telecommunications Commission's 100 per cent target for captioning local news and 90 per cent target for all other programming. However, only a relative few reporters achieve the standards required to become captioners.

Legal and realtime reporters are part of the larger National Occupational Classification 1244: Court Recorders and Medical Transcriptionists. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Health Care and Social Assistance**
- **Management, Administrative and Other Support Services**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 700 Albertans are employed in the Court Recorders and Medical Transcriptionists occupational group which is expected to grow 1.0 to 2.0 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover. (**Note**: Since legal and realtime reporters form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for legal and realtime reporters.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Income for legal reporters and realtime captioners depends on the work available to them, their skill level and the productivity of the reporter. New graduates generally start at **$30,000 to $38,000 a year**; average salaries range from **$45,000 to $60,000 a year (2005 estimate).**

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Court Recorders and Medical Transcriptionists occupational group working part-time or full-time earned from **$18,300 to $56,900 a year.** The average salary was **$34,400 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Shorthand Reporters Association (ASRA) website: www.asraonline.com

National Court Reporters Association (NCRA) website: www.ncraonline.org

Related Occupational Profiles

Judicial Clerk
Legal Secretary
Medical Transcriptionist
Paralegal
Word Processing Operator

Related High School Subjects

Communication Technology; Information Processing; Language Arts; Legal Studies; Physical Education; Science; and Social Studies

Related Post-Secondary Fields of Study

Clerical and Administrative Support

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Legal Secretary

Produced OCTOBER 2005

Legal secretaries perform a variety of secretarial and administrative duties in law offices, the legal departments of large organizations, courts, real estate companies and land title offices.

NOC Number(s): 1242
Minimum Education: 1 year post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **M O d**

Duties

Duties and responsibilities vary from one organization to another but, in general, legal secretaries:

- use word processing software to prepare correspondence and legal documents such as deeds, wills, mortgages, contracts, statutory declarations, affidavits, motions and briefs
- answer the telephone, schedule appointments and meetings, greet visitors and handle administrative and business details
- set up and maintain records management systems including classifying and coding electronic and hardcopy files
- transcribe meeting agendas and minutes from voice recordings or handwritten notes
- open correspondence (including faxes and e-mail), co-ordinate the flow of information and respond to routine inquiries
- review and proofread outgoing documents to ensure that they are correct and comply with legal proceedures
- access and use on-line legal resources
- operate sophisticated office equipment such as voice mail messaging systems and computer scanning equipment
- handle routine accounting procedures
- perform general office duties as required
- may attend court or conferences to take notes, minutes and dictation.

Legal secretaries are often called legal assistants. With experience, their duties and responsibilities may overlap with those of paralegals (for more information, see the Paralegal occupational profile).

Working Conditions

Legal secretaries work in fast-paced office environments. They usually work standard office hours but overtime may be required to meet deadlines.

Personal Characteristics

Legal secretaries need the following characteristics:

- excellent oral and written communication skills
- good organizational and time management skills
- personal integrity and the ability to maintain confidentiality
- the ability to work independently or as part of a team.

They should enjoy dealing with people, operating equipment such as computers, and compiling and organizing information.

Educational Requirements

Employers require legal secretaries to be computer literate and have fast, accurate keyboarding skills. Some require a typing speed of 60 words per minute. A post-secondary certificate or diploma in office administration, Internet literacy and familiarity with legal vocabulary are definite assets.

In Alberta, many colleges, technical institutes and private vocational schools offer secretarial and office administration programs. For a listing, see the Administrative Assistant occupational profile. The following institutions offer programs specifically for administrative assistants in legal offices.

- **Bow Valley College** in Calgary offers a two year Legal Assistant diploma program and a part-time Legal Administrative Assistant program that includes nine courses (21 hours each). The entrance requirement for the diploma program is a high school diploma with English 30-2 and Grade 10 math, or equivalent.
- The **CDI College of Business, Technology and Healthcare**, a private vocational school located in Calgary and Edmonton, offers a 54 week Professional Legal Assistant program. The entrance requirement is a high school diploma with English 30 or 33, or equivalent.
- **Grant MacEwan College** in Edmonton offers a two year Legal Assistant diploma program. The entrance requirement is a high school diploma or equivalent. Applicants must take an English appraisal (or have at least 65 per cent in English Language Arts 30-1 or English 30, or 75 per cent in ELA 30-2 or English 33) and a keyboard entrance test (30 words per minute with no more than six errors).
- **HCC Choice College** in Spruce Grove offers a 25 week Legal Secretary program. The entrance requirement is a high school diploma with Grade 12 English and Math 10 (or any Grade 11 math), or equivalent.
- **Red Deer College** offers a two year Legal Assistant diploma program. The entrance requirement is a high school diploma or equivalent. The College also offers a Legal Focus Certificate program for people who are already employed in a legal environment.
- The **Southern Alberta Institute of Technology (SAIT)** in Calgary offers a two year Legal Assistant diploma program. The entrance requirement is a high school diploma or equivalent.
- **Trend College**, a private vocational school in Edmonton, offers a 46 week Legal Adminstrative Assistant certificate program. The entrance requirement is a high school diploma with a Grade 12 English and a Grade 11 or 12 math, or equivalent.

Continuing education programs are often offered on an as needed basis.

For current information about programs and mature student admission policies, please check post-secondary calendars or websites.

Prospective students should investigate the suitability and reputation of training programs with employers before enrolling in a program. For information about related two year diploma programs, see the Paralegal occupational profile.

The **Legal Education Society of Alberta (LESA)** offers professional development courses for legal support staff.

Employment and Advancement

(section revised JANUARY 2006)

Legal secretaries are employed by:

- legal firms
- the legal departments of large corporations
- real estate companies
- municipal, provincial and federal courts
- related government departments and agencies (e.g. land title offices).

In large organizations, experienced legal secretaries may advance to supervisory positions.

In Alberta, over 75 per cent of people employed as legal secretaries work in the **Professional and Technical Services** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Professional and Technical Services industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 3,750 Albertans are employed in the Legal Secretaries occupational group which is expected to grow 1.0 to 2.0 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 30 to 80 **new** positions will be created each year **in addition** to job openings created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Legal Secretaries occupational group working part-time or full-time earned from **$14,500 to $90,500 a year.** The average salary was **$36,500 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Legal Education Society of Alberta (LESA) website: www.lesa.org

Related Occupational Profiles

Administrative Assistant
Legal and Realtime Reporter
Paralegal
Word Processing Operator

Related High School Subjects

Information Processing; Language Arts; Legal Studies; Management and Marketing; Mathematics; and Social Studies

Related Post-Secondary Fields of Study

Clerical and Administrative Support

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Letter Carrier

Produced NOVEMBER 2005

Letter carriers are employees of Canada Post who sort and deliver mail for established routes, record delivery of registered mail and collect payments for cash-on-delivery (COD) parcels.

NOC Number(s): 1462
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus below average occupational growth in Alberta
Interests: **M o s**

Duties

On a typical day, letter carriers:

- arrive at the post office at an established time between 3 and 8:30 a.m. and pick up the mail for their routes
- sort mail into cases that have pigeon holes for every address on a route
- bundle mail in preparation for delivery
- prepare bags of mail for transport by truck to relay boxes along routes.

This takes about 30 per cent of their working day. For the remainder of their shift, they:

- deliver letters, small packages and printed matter
- collect money for COD parcels
- record delivery of registered mail
- leave cards telling people where to call for undeliverable mail
- keep records of changes of address, redirect mail and complete forms to notify publishers of changes.

Letter carriers also may deliver telegrams or special types of mail.

Working Conditions

Letter carriers routinely lift pouches and sacks of mail weighing up to 22.7 kilograms and carry up to 15.9 kilograms. Route lengths vary from four to ten kilometres (400 to 600 deliveries) depending on the location and average daily volume of mail. Time motion studies called walk evaluations are done periodically to ensure that the work load is roughly the same for each letter carrier. Some letter carriers drive motor vehicles to reach routes that are not accessible by public transportation.

Letter carriers are on their feet all day and work in all types of weather conditions. They are provided with suitable uniforms for each season. Occupational hazards include unfriendly dogs, icy and snowy sidewalk conditions, and poorly maintained steps and sidewalks.

Personal Characteristics

Letter carriers need the following characteristics:

- the physical strength and stamina required to carry a heavy satchel in all types of weather
- a good memory for names and numbers
- good organizational skills
- the finger and manual dexterity required for sorting mail
- a courteous manner and good communication skills for dealing with the public.

They should enjoy having clear guidelines for their work and following a set routine, handling printed matter and dealing with people.

Educational Requirements

For employment with Canada Post, letter carriers must:

- pass practical and oral tests set by Canada Post
- have some related experience
- have a valid driver's license with no more than six demerit points, no more than two minor infractions and no major infractions.

Letter carriers receive one week of classroom training plus training on the job.

Employment and Advancement

(section revised JANUARY 2006)

Letter carriers are employed by Canada Post in larger towns and cities across the country. They usually start as temporary employees who may be called in to work only a few days a month. The waiting period before obtaining a permanent position can be several years.

All letter carriers are members of the Canadian Union of Postal Workers (CUPW).

Most letter carriers remain in this classification but, with experience, advancement to supervisory and management positions is possible.

In Alberta, people employed as letter carriers work in the **Transportation and Warehousing** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Transportation and Warehousing industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 3,650 Albertans are employed in the Letter Carriers occupational group which is expected to grow 0.3 to 1.3 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 10 to 50 **new** positions will be created each year **in addition** to job openings created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Benefits for permanent employees include a disability insurance plan, dental plan, vision care and hearing aid plan, group surgical and medical plan, supplementary death benefits plan, superannuation plan, minimum of three weeks vacation each year and paid sick leave.

Hourly wages for letter carriers range from **$20.10 to $20.65 an hour (2005 figures)**.

Other Sources of Information

Canada Post website: www.canadapost.ca

Canadian Union of Postal Workers (CUPW) website: www.cupw-sttp.org

Related Occupational Profiles

Mail Sorter
Messenger/Courier
Postal/Wicket Clerk

Related High School Subjects

Language Arts; and Physical Education

Related Post-Secondary Fields of Study

Personal and Food Services

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Librarian

Produced DECEMBER 2005

Librarians assess the informational, educational, cultural and recreational needs of the community they serve, find resources to meet those needs, and provide access to and manage resources.

NOC Number(s): 5111
Minimum Education: 6 years post-secondary education/training
Employment Outlook: Employment turnover plus below average occupational growth in Alberta
Interests: **M S d**

Duties

Librarians lead and manage the delivery of library services. They make information accessible by selecting, purchasing, organizing, maintaining and retrieving a wide variety of materials: books, newspapers, periodicals, government documents, films, microfilm, audio cassettes, videotapes, on-line databases and electronic information resources (for example, CD-ROMs and Internet documents). This involves the development and use of classification and information management systems to organize, house and display materials in such a way that desired resources can be readily located, obtained and used. It also involves teaching others how to use information resources and providing related advice.

Librarians' duties vary depending on the size and type of organization (for example, public library, school, government department, corporate office, information technology firm) but, in general, librarians:

- help people access the materials and information they want
- answer questions by critically assessing information in reference books and resources such as on-line databases and the Internet
- evaluate, select and purchase materials, and negotiate software licensing agreements
- catalogue materials and supervise cataloguing assistants
- develop access/instructional resources such as indexes, bibliographies, web pages, electronic pathfinders and on-line tutorials
- evaluate, select, use and maintain computer systems and software
- plan and deliver client-centered programs and services (for example, services for corporate clients, storytelling for children, newsletters, public lectures, or programs for seniors, young adults or special groups)
- design and deliver information literacy instruction programs
- collaborate in facility planning
- advocate on behalf of libraries and information service, and do public relations work for their organizations (for example, do televised book reviews or community talks)
- develop library policies and procedures
- supervise library staff
- conduct related research.

Librarians also may have management responsibilities such as planning and budgeting. In public libraries, managers work closely with advisory boards and municipal governments. In corporate settings, librarians may be members of the corporation's management team.

Working Conditions

Librarians may work in large libraries providing services to the public or smaller libraries providing specialized resources and reference information for a specific group of people.

Academic and public libraries may require librarians to work evening and weekend shifts.

Personal Characteristics

Librarians need the following characteristics:

- critical reading and thinking skills
- good interpersonal skills and a strong customer service orientation
- an interest in information technology
- good oral and written communication skills
- good organizational and time management skills
- strong decision-making skills
- initiative
- creativity, *imagination and flexibility*
- the ability to work independently or as part of a team.

They should enjoy organizing and locating information, instructing and helping people, and supervising and co-ordinating the work of others.

Educational Requirements

New entrants to the profession must have a master's degree in library science or library and information studies. Some positions also require specialized subject knowledge. For example, employers generally require music librarians to have a bachelor's degree or master's degree in music.

The **University of Alberta** in Edmonton offers a two year **Master of Library and Information Studies (MLIS)** program. The entrance requirement is a four year bachelor's degree or equivalent from a recognized institution and a Grade Point Average (GPA) sufficient for admission to a graduate program.

The University of Alberta also offers a **Teacher-Librarianship Diploma** program by distance learning. Applicants must have an approved degree and a teaching certificate. Classroom teaching experience is strongly recommended.

Employment and Advancement

(section revised JANUARY 2006)

Librarians are employed by:

- public libraries in urban centres and rural communities
- public and private schools, colleges and universities
- regional libraries
- corporate, government, hospital and legal libraries
- publishers and broadcasters
- museums and archives
- not-for-profit organizations
- information brokerage firms
- information technology firms
- bookstores.

A growing number of librarians are self-employed and work as independent consultants or entrepreneurs.

In larger libraries, experienced librarians may advance to management positions such as cataloguing or reference services manager, branch head or library director.

In Alberta, over 75 per cent of people employed as librarians work in the following industries:

- **Information, Culture and Recreation**
- **Educational Services**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 1,200 Albertans are employed in the Librarians occupational group which is expected to grow grow 0.4 to 1.4 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Librarians occupational group working part-time or full-time earned from **$11,900 to $66,300 a year.** The average salary was **$47,700 a year.**

Other Sources of Information

Post-secondary institution calendar or website (see Educational Requirements above)

Canadian Library Association (CLA) website: www.cla.ca

Special Library Association (SLA) website: www.sla.org

Related Occupational Profiles

Archivist
Library Technician
Webmaster

Related High School Subjects

Communication Technology; Information Processing; Language Arts; Management and Marketing; and Social Studies

Related Post-Secondary Fields of Study

Education and Library Studies

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Library Clerk

Produced DECEMBER 2005

Library clerks help librarians and library technicians by serving library users and performing many of the clerical tasks involved in library work.

NOC Number(s): 1451
Minimum Education: High school diploma
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **M S o**

Duties

In general, library clerks:

- issue books and audio-visual materials to library users
- check for damage when materials are returned
- deal with library users' questions and concerns and, when appropriate, refer them to other library staff members
- sort materials and replace them on the shelves
- help people find books and publications
- photocopy and mail out material
- maintain records of over-due books and issue notices
- accept fine payments
- reserve requested materials
- sort and stamp mail
- do related word processing, as required.

Other duties depend upon the size and nature of the library. Library clerks also may:

- issue library membership cards
- make minor repairs to damaged books
- answer telephone inquiries
- process new materials including books, audiovisual materials and computer software
- enter bibliographic information into databases
- maintain the periodical section
- assist in delivering programming for children and adults
- keep pamphlet files up to date
- assist in the preparation of displays
- issue photocopier cards.

Many duties are automated. In large libraries, duties are generally divided among a number of library or circulation clerks.

Working Conditions

Public, college and university libraries require library clerks to work some evenings and weekends, usually on a rotating basis. School and business libraries are normally open only during regular school and business hours. Lifting up to 10 kilograms may be required.

Personal Characteristics

Library clerks need the following characteristics:

- patience and a strong customer service orientation
- flexibility and resourcefulness
- the ability to communicate effectively and deal pleasantly with library users

- the ability to work with little supervision
- the ability to work as part of a team
- an appreciation for detail
- the ability to maintain accuracy and persevere at tasks that may be repetitive.

They should enjoy taking a methodical approach to tasks such as reshelving books, helping people find information, and working with equipment such as computers.

Educational Requirements

Most employers prefer to hire people who have:

- at least a high school diploma
- related education or training
- keyboarding and computer skills
- volunteer or part-time work experience in a library
- past work experience in a service capacity, helping the public.

Post-secondary education is a definite asset.

Once hired, library clerks are trained on the job or take related post-secondary courses (for more information, see the Library Technician occupational profile).

Employment and Advancement

(section revised JANUARY 2006)

Library clerks are employed in:

- school and post-secondary institution libraries
- public libraries
- libraries in large business firms
- technical libraries
- medical libraries
- government departmental libraries.

Some positions are part-time. Advancement to library technician positions requires completion of a two year post-secondary diploma program (see the Library Technician occupational profile).

In Alberta, most people employed as library clerks work in the following industries:

- **Information, Culture and Recreation**
- **Educational Services**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 1,150 Albertans are employed in the Library Clerks occupational group which is expected to grow 1.0 to 2.0 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 10 to 30 **new** positions will be created each year **in addition** to job openings created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Salaries for library clerks vary greatly depending upon the responsibilities of the position, the nature and location of the library, and the clerk's qualifications.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Library Clerks occupational group working part-time or full-time earned from **$11,200 to $39,200 a year.** The average salary was **$36,300 a year.**

Related Occupational Profiles

Library Technician

Related High School Subjects

Information Processing; Language Arts; and Social Studies

Related Post-Secondary Fields of Study

Education and Library Studies; and Personal and Food Services

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For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Library Technician

Produced DECEMBER 2005

Library technicians support and assist librarians by performing technical tasks involved in library work such as collection management, cataloguing and document delivery. They also provide reference services and may manage small corporate, school or public libraries.

NOC Number(s): 5211.1
Minimum Education: 2 years post-secondary education/training
Employment Outlook: Employment turnover plus below average occupational growth in Alberta
Interests: **S M i**

Duties

Library technicians may work in large libraries providing services to the public or in smaller libraries providing specialized resources and reference information to a particular client group. Therefore, their duties and responsibilities may vary considerably from one position to another. However, in general, library technicians:

- acquire materials (print, audio-visual and electronic) and classify, catalogue and maintain them
- process interlibrary loans
- help clients find and use library resources such as reference materials, audio-visual equipment or electronic resources
- search online databases and other electronic information resources such as in-house databases or the Internet to find answers to reference questions
- code and input bibliographic data
- assist in the design and maintenance of in-house databases, web pages and local area networks
- provide library orientation and instruction for library users
- deliver programs designed for children, young adults or other groups
- compile and consult print and electronic indexes
- select news clippings and prepare competitive intelligence information for library users
- supervise other staff, volunteers or student assistants.

Under the supervision of a librarian, library technicians may be responsible for sections or departments in a larger library. In smaller libraries, technicians may assume full responsibility for library operations including ordering materials and managing the library's budget.

Working Conditions

Academic and public libraries often require library technicians to work evening and weekend shifts. Some lifting up to 10 kilograms may be required.

Personal Characteristics

Library technicians need the following characteristics:

- a strong customer service orientation
- initiative
- a flexible attitude
- the ability to follow directions for detailed tasks
- good organizational and time management skills
- excellent communication skills
- an interest in computers and computer technology
- the ability to work independently and as part of a team.

They should enjoy helping people find information, taking a methodical approach to their work, and being creative as well as paying careful attention to details.

Educational Requirements

Library technicians must be knowledgeable about library operations including computer applications. Most library technicians are graduates of related two year diploma programs or have at least two years of post-secondary education. Employers generally prefer to hire applicants who have related work or volunteer experience.

In Alberta, the following post-secondary institutions offer related two year diploma programs:

- **Grant MacEwan College** in Edmonton offers an Information Management and Library Technology diploma program that includes a library field placement. The entrance requirement is a high school diploma or equivalent with at least 65 per cent in English Language Arts 30-1 or English 30 (or 75 per cent in ELA 30-2 or English 33), or mature student status. Good communication skills are essential.
- the **Southern Alberta Institute of Technology (SAIT)** in Calgary offers a Library and Information Technology program that includes two library field placements. The entrance requirement is a high school diploma or equivalent with at least 60 per cent in English Language Arts 30 or English 30 (or 65 per cent in ELA 30-2 or English 33), 50 per cent in Social Studies 30 or 33, and 60 per cent in one of the following Grade 12 subjects: math, science, social science, accounting, law or a second language. Mature students may substitute LIB200: Introduction to Libraries for the Grade 12 subject. Successful completion of a keyboarding course is recommended. LIB200 and the first year of this program may be taken by distance education.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

(section revised JANUARY 2006)

Library technicians are employed in:

- urban, regional and rural public libraries
- corporate, government, hospital and legal libraries
- public and private schools, colleges and universities
- not-for-profit organizations
- information brokerage firms
- library software production companies
- book, periodical and publishing firms
- records management departments in large organizations
- bookstores.

Experienced library technicians may advance to supervisory positions or assume responsibility for the operations of established libraries. However, other advancement opportunities are limited. Canadian universities do not recognize library technician courses for transfer credit to master's programs in library science.

Library technicians are part of the larger National Occupational Classification 5211: Library and Archive Technicians and Assistants. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Information, Culture and Recreation**
- **Educational Services**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 1,550 Albertans are employed in the Library and Archive Technicians and Assistants occupational group which is expected to grow 0.6 to 1.6 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover. (**Note**: Since library technicians form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for library technicians.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Library and Archive Technicians and Assistants occupational group working part-time or full-time earned from **$18,700 to $45,200 a year.** The average salary was **$32,400 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Association of Library Technicians (AALT) website: www.aalt.org

Special Libraries Association (SLA) website: www.sla.org

Related Occupational Profiles

Health Information Management Professional
Librarian
Library Clerk
Paralegal
Webmaster

Related High School Subjects

Information Processing; Language Arts; and Social Studies

Related Post-Secondary Fields of Study

Education and Library Studies

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Licensed Practical Nurse

Produced SEPTEMBER 2004

Licensed practical nurses provide care for individuals, families and groups in a variety of health care settings. They may practice independently or as part of a health care team.

NOC Number(s): 3233.1
Minimum Education: 1 year post-secondary education/training
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: M S O

Duties

Licensed practical nurses work in settings ranging from hospitals, continuing care facilities and community care to physicians' offices and schools. Depending on the setting, they may have a variety of nursing care responsibilities in collaboration with registered nurses, psychiatric nurses, physicians, physiotherapists or other health care professionals. How independently licensed practical nurses carry out these responsibilities depends on the nature and complexity of the patient care required and the environment in which they work.

In general, licensed practical nurses:

- provide direct care by assessing client health needs
- participate in the planning of care
- implement nursing interventions
- evaluate the outcomes of nursing interventions
- confer with other health care team members as necessary
- document and communicate client data to ensure continuity of care.

Licensed practical nurses who have advanced specialty training may provide expanded services in operating rooms, orthopedics, hemodialysis or immunization programs.

Working Conditions

Licensed practical nurses may work in very different settings ranging from hospitals to patients' homes. Depending on where they are employed, they may work shifts that include evenings, nights, weekends and holidays. They may be required to help lift immobile patients or lift items weighing up to 25 kilograms.

Personal Characteristics

Licensed practical nurses need the following characteristics:

- a caring attitude
- good communication and interpersonal skills
- the ability to work independently and as part of a health care team
- a commitment to life-long learning
- critical thinking and problem solving abilities.

They should enjoy working with people, and operating medical and computer equipment.

Educational Requirements

(section revised AUGUST 2005)

In Alberta, licensed practical nurses must be graduates of an approved practical nursing education program or have equivalent training. Practical nursing programs consist of a combination of classroom and laboratory instruction and clinical experience in various health care settings. These programs take just over one year to complete.

Licensed practical nursing programs are offered by the following post-secondary institutions. Applicants for these programs must be at least 18 years of age and have a clear criminal records check.

- **Bow Valley College** offers programs in Calgary and various locations under the auspices of Big Country Educational Consortium and Chinook Educational Consortium. The entrance requirement is at least 60 per cent in English 30-1 or 30 (or 70 per cent in English 30-2 or 33), Pure Math 20 or Applied Math 30 (or 70 per cent in Applied Math 20) and Biology 30 (or Bow Valley College's Anatomy and Physiology/Microbiology), or equivalent.
- **Keyano College** in Fort McMurray. Admission requirements are the same as for the NorQuest College program.
- **Lakeland College** in Lloydminster. Admission requirements are the same as for the NorQuest College program.
- **Lethbridge Community College**. Admission requirements are the same as for the Bow Valley College program.
- **Medicine Hat College**. Admission requirements are the same as for the Bow Valley College program.
- **Northern Lakes College** in Grouard offers programs in Slave Lake and various other locations. The entrance requirement is at least 60 per cent in English 30-1 (or 70 per cent in English 30-2 or 33) and Biology 30 plus Pure Math 20 (or Math 20, or 60 per cent in Applied Math 20 or Math 23). Applicants also must have a current Standard First Aid and Basic Rescuer (Level 3 or C) certificate, up-to-date immunization (Hep B immunization may be completed while in the program), a criminal record check and basic computer skills.
- **NorQuest College** offers programs in Edmonton and various locations. The entrance requirement is a high school diploma, or equivalent, with at least 50 per cent in English 30 (or 60 per cent in English 33), Math 10 or 23 (or Pure Math 10 or Applied Math 20) and Biology 30, Chemistry 30 or Physics 30 (Biology 30 preferred).
- **Portage College** in Lac La Biche. Admission requirements are the same as for the NorQuest College program.
- **Red Deer College**. Admission requirements are the same as for the Bow Valley College program.

Continuing education programs are offered throughout the province on an as needed basis and via distance learning.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Other Requirements

(section revised OCTOBER 2004)

Under Alberta's Health Professions Act and Licensed Practical Nurses Profession Regulation, registration with the College of Licensed Practical Nurses of Alberta (CLPNA) is mandatory if you meet identified competency requirements and provide professional services directly to the public, teach the practice of the profession to members or students of the profession, or supervise registered members who provide services to the public. Registered members who are authorized by the College may perform restricted activities specified in the Regulation. Only registered members may call themselves Licensed Practical Nurses.

Employment and Advancement

(section revised JANUARY 2006)

Licensed practical nurses are employed by:

- regional health authorities
- continuing care facilities
- community care agencies
- occupational health departments in large organizations
- medical clinics
- schools
- group homes.

With additional training, licensed practical nurses may move into occupational health roles in industry, or work in independent foot care businesses or ophthlamic clinics.

In Alberta, most people employed as licensed practical nurses work in the **Health Care and Social Assistance** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Health Care and Social Assistance industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation**.

Over 5,500 Albertans are employed in the Licensed Practical Nurses occupational group which is expected to grow 2.1 to 3.1 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 110 to 180 **new** positions will be created each year **in addition** to job openings created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Licensed Practical Nurses occupational group working part-time or full-time earned from **$19,600 to $41,600 a year.** The average salary was **$32,300 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

College of Licensed Practical Nurses of Alberta (CLPNA) website: www.clpna.com

Related Occupational Profiles

Community Health Nurse
Licensed Practical Nurse (Advanced Orthopaedic Specialty)
Midwife
Personal Care Attendant
Psychiatric Nurse
Registered Nurse
Sterile Processing Technician

Related High School Subjects

Community Health; Language Arts; Mathematics; Physical Education; and Science (Biology; and Chemistry)

Related Post-Secondary Fields of Study

Health Care and Medical Sciences

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Licensed Practical Nurse (Advanced Orthopaedic Specialty)

Produced SEPTEMBER 2004

Licensed practical nurses (LPNs) in the advanced orthopaedic specialty apply, adjust and remove a variety of casts, commercial splints/braces, bandages and traction. They work as part of health care teams in emergency departments, cast rooms, orthopaedic surgical wards and medical clinics.

NOC Number(s): 3233.1
Minimum Education: 2 years post-secondary education/training
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: **M S O**

Duties

LPNs (advanced orthopaedic specialty) work under the direction of orthopaedic surgeons and casualty officers. Their duties vary from one position to another but, in general, they:

- apply, adjust, maintain and remove casts, including specialized casts such as body casts
- remove dressings and assess the condition of wounds
- maintain and remove fracture pins
- set up, operate and maintain various types of traction equipment
- fit and apply commercial fracture braces and other braces
- fit, adjust and maintain continuous pass motion (CPM) machines for people who have had knee or shoulder surgery
- apply splints and bandages
- remove staples and sutures
- provide information to clients about their injuries, treatment plans and how to care for casts, braces and splints, reinforcing medical information which already may have been provided by physicians
- assist physicians with other orthopaedic procedures such as injections and fracture/dislocation reductions
- maintain orthopaedic equipment and supplies.

Working Conditio[illegible]

LPNs (advanced orthopaedic specialty) may work shifts including weekends, evenings and nights. Lifting up to 25 kilograms may be required.

Personal Characteristics

LPNs (advanced orthopaedic specialty) need the following characteristics:

- manual dexterity
- strong interpersonal skills
- consideration for clients and families in distress
- organizational ability to handle the high volume of orthopaedic services in many health centres
- the ability to work independently and as a member of a team
- commitment to continuous learning.

They should enjoy having clear rules and organized methods, and operating and adjusting orthopaedic equipment.

Educational Requirements

(section revised JUNE 2005)

In Alberta, LPNs (advanced orthopaedic specialty) must be **licensed practical nurses** who have completed an approved **advanced education in orthopaedics** program. For information about licensed practical nurse programs, see the Licensed Practical Nurse occupational profile.

In Alberta, **NorQuest College** in Edmonton offers a 28-week Advanced Education in Orthopaedics certificate program. Applicants must be registered licensed practical nurses who have a minimum of one year experience in an acute care setting and who have successfully completed the Advanced Anatomy and Physiology and Orthopedic Assessment. Up to date immunization record is also required.

Other Requirements

(section revised OCTOBER 2004)

Under Alberta's Health Professions Act and Licensed Practical Nurses Profession Regulation, registration with the College of Licensed Practical Nurses of Alberta (CLPNA) is mandatory if you meet identified competency requirements and provide professional services directly to the public, teach the practice of the profession to members or students of the profession, or supervise registered members who provide services to the public. Registered members who are authorized by the College may perform restricted activities specified in the Regulation. Only registered members may call themselves Licensed Practical Nurses.

Employment and Advancement

(section revised JANUARY 2006)

Most LPNs (advanced orthopaedic specialty) are employed in emergency departments and hospital cast rooms, day and out-patient departments, medical clinics and walk-in health clinics.

In Alberta, most people employed as LPNs (advanced orthopaedic specialty) work in the **Health Care and Social Assistance** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Health Care and Social Assistance industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 5,500 Albertans are employed in the Licensed Practical Nurses occupational group which is expected to grow 2.1 to 3.1 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 110 to 180 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since those working in orthopaedics form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for them.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Licensed Practical Nurses occupational group working part-time or full-time earned from **$19,600 to $41,600 a year.** The average salary was **$32,300 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

College of Licensed Practical Nurses of Alberta (CLPNA) website: www.clpna.com

Related Occupational Profiles

Licensed Practical Nurse

Related High School Subjects

Community Health; Language Arts; Mathematics; Physical Education; and Science (Biology; and Chemistry)

Related Post-Secondary Fields of Study

Health Care and Medical Sciences

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Life Skills Coach

Produced SEPTEMBER 2003

Life skills coaches lead experiential learning groups. They prepare learners to deal effectively with personal issues by guiding them through activities such as self discovery and behaviour identification exercises.

NOC Number(s): 4212
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: S M i

Duties

Life skills coaches work with groups of young people and adults. Their duties and responsibilities vary from one position to another but, in general, they:

- encourage independence and self-confidence
- motivate group members and facilitate adjustment to change
- teach and model good communication, interpersonal and problem solving skills
- establish, maintain and enforce standards of acceptable behaviour
- help group members define personal behavioural objectives
- modify and deliver lessons that respond to participants' needs
- help group members identify and implement constructive solutions to problems
- evaluate performance and help group participants to evaluate their own performance
- keep notes and records.

Life skills coaches work as part of a social service team and are often involved in case conferences and case management sessions. They may also deliver career development programs (for more information, see the Career Counsellor/Advisor occupational profile) and administer work experience programs.

Working Conditions

Life skills coaches may work in a wide variety of settings. Their hours of work also vary and may include evening and weekend hours.

The work demands emotional maturity and can be stressful. Life skills coaches may have to deal with mental health and legal issues, behavioural problems and incidents of aggression.

Personal Characteristics

Life skills coaches need the following characteristics:

- a genuine interest in helping people develop better ways of dealing with their problems
- excellent oral and written communication skills
- emotional maturity and good judgement
- the ability to listen non-judgementally, with empathy and understanding
- the ability to keep contacts with clients on a professional level
- creative ability for developing new approaches and programs
- decision-making skills.

They should enjoy helping others, compiling information and developing innovative approaches to problem solving.

Educational Requirements

(section revised APRIL 2005)

Academic qualifications vary greatly in this occupation. Most life skills coaches have **post-secondary education** in a related discipline such as psychology or social work. Suitable certificate, diploma and degree programs are offered by post-secondary institutions throughout Alberta. For more information, see occupational profiles such as Addictions Counsellor, Career Counsellor/Advisor, Child and Youth Care Worker, Community Health Representative, Psychiatric Nurse, Psychologist and Social Worker. The ability to communicate in languages other than English, especially First Nations languages, is an asset.

In Alberta, the following post-secondary institutions offer programs that are specifically designed to train life skills coaches:

- **Bow Valley College** in Calgary offers:
  - an eight-month Life Skills Coach certificate program that is based on the Saskatchewan NewStart model of experiential adult education. The program is offered on an evening and weekend schedule. Admission requirements include three to five years of experience in human or community service, Grade 12 or equivalent education plus some post-secondary education, and evidence that applicants use successful life skills in their own lives. Applicants must participate in a selection interview and be willing to participate in self-exploration, coaching theory and development activities. Graduates of this program may be recommended for a 100-hour internship program to qualify for the Certified Life Skills Coach designation.
  - a two year Life Skills and Career Development Coach diploma program. Applicants entering this program must have successfully completed the Life Skills Coach certificate program or an equivalent prerequisite for the diploma program.
- **Columbia College**, a private vocational school in Calgary, offers a full-time (25 weeks) and part-time (50 weeks) Human Services Professional diploma and certificate programs. Applicants must have Grade 12 or equivalent education. To enter the diploma program, students must have successfully completed the Human Resources Certificate program from a recognized institution or its equivalent.
- **Life Skills Training Centre (Canada) Ltd.**, a private vocational school in Edmonton, offers a 12-week Life Skills Coach Training program. Applicants must have Grade 12 or equivalent education and three letters of recommendation. They must also pass an aptitude test and a personal interview.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Other Requirements

Certification is not legally required to work as a life skills coach in Alberta but may be required as a condition of employment.

The Alberta Society of Professional Life Skills Coaches has a certification process that is based on the NewStart training model and leads to the designation Certified Life Skills Coach, Accredited. For more information, see the Canadian Alliance of Life Skills Coaches and Associations website.

Employment and Advancement

(section revised JANUARY 2006)

Life skills coaches work for social service agencies. They may be employees or work on a contract basis.

Without further education, advancement opportunities are limited.

Life skills coaches are part of the larger National Occupational Classification 4212: Community and Social Service Workers. In Alberta, over 75 per cent of people employed in this classification work in the **Health Care and Social Assistance** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Health Care and Social Assistance industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)

- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 9,600 Albertans are employed in the Community and Social Service Workers occupational group which is expected to grow 1.7 to 2.7 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 160 to 260 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since life skills coaches form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for life skills coaches.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Community and Social Service Workers occupational group working part-time or full-time earned from **$14,100 to $104,900 a year**. The average salary was **$27,800 a year**.

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Canadian Alliance of Life Skills Coaches and Associations website: calsca.com

Related Occupational Profiles

Addictions Counsellor
Career Development Professional
Child and Youth Care Worker
Community Health Representative
Correctional Services Worker
Family/Marriage Counsellor
Home Economist
Human Ecologist
Mental Health Worker

Related High School Subjects

Communication Technology; Community Health; Language Arts; Languages (other than English); Management and Marketing; and Social Studies

Related Post-Secondary Fields of Study

Health Care and Medical Sciences; Social Sciences, Law and Religious Studies; and Social, Community and Protective Services

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For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Lighting Designer

Produced FEBRUARY 2004

Lighting designers design and plan lighting effects for theatre, dance, opera, television, video and film productions.

NOC Number(s): 5243.1
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: I M D

Duties

Lighting designers consult with directors and other designers to define a stylistic approach for each production. They create light plots and sequence lighting cues which must take into consideration the size, shape and technical capabilities of the theatre or performing space, the visibility of performers and the mood of each scene as well as complement set and costume designs.

Duties and responsibilities vary from one type of production to another but, in general, lighting designers:

- read the script and attend some rehearsals to see how the stage or acting area will be used in the production
- consult with the director and other designers to develop design concepts, create lighting plots, schedules and equipment lists
- supervise the hanging and focusing of lighting instruments
- build lighting cues for the production
- attend technical and dress rehearsals to supervise the lighting and make changes as needed.

In some theatres, one designer may be responsible for lighting, set design and costume design. In smaller theatres, the lighting designer may also program and run the lighting board for a production (for more information, see the Lighting Technician occupational profile).

Working Conditions

Lighting designers usually work from home offices and often work long hours to meet deadlines. The use a variety of materials, tools and equipment including technology that is unique to the profession.

Personal Characteristics

Lighting designers need the following characteristics:

- creativity and artistic vision
- flexibility
- good spatial perception
- the communication and interpersonal skills required to work effectively with others and market their ideas or services.

They should enjoy synthesizing information about diverse requirements, experimenting and finding innovative solutions to problems, doing precise work with tools and equipment, and supervising the work of others.

Educational Requirements

(section revised JULY 2005)

Lighting designers need:

- an understanding of design principles and elements, and three-dimensional space
- practical experience in technical theatre
- math and drafting skills

- computer skills (especially computer aided drafting).

Because this field is so specialized, lighting designers need **related post-secondary education**. A bachelor's degree or master's degree in fine art with a specialization in theatre design is recommended.

In Alberta, the following institutions offer programs specifically in theatre design:

- The **University of Alberta** in Edmonton offers a four year Bachelor of Fine Art (BFA) degree program in theatre design. The entrance requirement is one year of university studies (which counts toward the degree), including an English class at the University of Alberta or in a university transfer program offered elsewhere (courses in the Humanities, Social Sciences and Fine Arts are recommended). A portfolio and three letters of reference are required. The University of Alberta also offers a Master of Fine Arts (MFA) degree in theatre design.
- The **University of Lethbridge** offers a four year BFA degree program in drama with a design/technical major. The entrance requirement is an average of at least 60 per cent in English 30, three other appropriate 30 level subjects and a fifth Grade 12 subject.
- During the summer months, the **Banff Centre for the Arts** offers Theatre Production and Design programs for people who already have related training and experience. The Centre also offers Theatre Production Residencies. Applicants must submit a resume and a statement of learning objectives.

The following institutions offer related technical programs or specializations:

- **Grant MacEwan College** in Edmonton offers a two year Theatre Production diploma program. The entrance requirement is a high school diploma or equivalent with English 30 (or at least 75 per cent in English 33).
- **Mount Royal College** in Calgary offers a two year Theatre Arts diploma program with a technical stream. The entrance requirement is a high school diploma, and an audition or interview.
- **Red Deer College** offers a two year post-diploma Bachelor of Applied Motion Picture Arts degree program with a specialization in motion picture production and management. The minimum entrance requirement is a grade point (GPA) average of 2.0/4 in a two year theatre, film or television diploma, or equivalent experience. Red Deer College also offers a two year Theatre Studies diploma program. The entrance requirements are a high school diploma or equivalent with English 30 or 33, an interview and audition.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

(section revised JANUARY 2006)

Lighting designers work for:

- theatre companies
- film and television studios
- opera and dance companies
- festivals.

Some theatre companies and film studios employ resident designers but most lighting designers work as freelance artists who negotiate contracts for specific projects. Therefore, aspiring lighting designers must develop a portfolio of their work. Volunteering to work for community amateur theatre companies or cable television stations provides valuable practice for lighting designers who are trying to gain experience in the field.

Graduates of design programs usually start as designers for smaller theatres or as assistant designers in larger theatres. Advancement generally takes the form of more demanding assignments. Some lighting designers teach at universities and colleges.

Lighting designers are part of the much larger National Occupational Classification 5243: Theatre, Fashion, Exhibit and Other Creative Designers. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Professional and Technical Services**
- **Information, Culture and Recreation**
- **Retail Trade**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)

- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 600 Albertans are employed in the Theatre, Fashion, Exhibit and Other Creative Designers occupational group which is expected to grow 1.2 to 2.2 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover. (**Note**: Since lighting designers form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for lighting designers.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Most lighting designers are hired on contract for particular productions. Fees vary considerably depending on the production and the designer's reputation.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Theatre, Fashion, Exhibit and Other Creative Designers occupational group working part-time or full-time earned from **$13,100 to $106,500 a year.** The average salary was **$28,900 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

Associated Designers of Canada (ADC) website: www.designers.ca

International Alliance of Theatrical Stage Employees, Moving Picture Technicians, Artists and Allied Crafts of the United States, Its Territories and Canada (IATSE) website: www.iatse-intl.org

Related Occupational Profiles

Cinematographer
Costume Designer
Craftsperson
Lighting Technician
Set Designer

Related High School Subjects

Communication Technology; Design Studies; Electro-Technologies; Fine Arts (Drama); Information Processing; Language Arts; Mathematics; Science (Physics); and Social Studies

Related Post-Secondary Fields of Study

Communications; and Fine Arts and Performing Arts

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Lighting Technician

Produced JULY 2005

Lighting technicians set up, maintain and operate light fixtures, control devices and the associated electrical and rigging equipment used for television, motion picture, and theatre and stage productions.

NOC Number(s): 5226.3
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: O M i

Duties

Lighting technicians use conventional lighting fixtures, moving head and moving mirror fixtures, colour filters, patterns, light modifiers and various methods of control and manipulation to create different lighting effects. In general, they:

- work co-operatively with the head electrician, a lighting designer/director, director of photography or gaffer (master electrician) to implement lighting designs
- read and interpret blueprints, and use computer assisted design (CAD) software to create drawings
- set up, focus and operate lighting fixtures, control consoles and auxiliary equipment
- perform simple electrical wiring tasks (usually 120v), trouble shoot circuits and calculate maximum circuit loads
- use manual or computer control consoles to control lighting throughout a production
- co-ordinate lighting rigs with sound techicians and stage carpenters
- perform routine maintenance functions such as replacing lamps and damaged colour filters or patterns, and maintaining lighting equipment in safe working condition.

For remote television broadcasts, lighting technicans survey locations, prepare lighting plans, arrange for the transportation of equipment and organize equipment setup.

In smaller organizations with no lighting director or designer, lighting technicians also may:

- attend production meetings and discuss lighting needs and special effects with directors
- design the lighting and decide where to place lighting equipment to achieve desired effects
- prepare budgets and work within them
- perform other duties such as operating audio equipment.

Working Conditions

Working conditions vary a great deal from one job to another. For example, working on a theatre production in a converted barn is very different from working in a television studio. In general, however, lighting technicians spend a lot of time on their feet and the pace of work can become hectic. Last minute changes are often required. Safety precautions must be observed at all times, particularly when handling hot lamps, climbing ladders, going up lifts, working above others and working on electrical cables and equipment.

Hours of work also vary:

- Lighting technicians employed by large television stations generally work 40 hours a week including evenings and weekends. Technicians covering important events or working on television series may be required to work 10 to 12 hours a day, sometimes from remote locations or in bad weather conditions.
- Those employed in theatres often work daytime hours prior to and during technical rehearsals and evening hours for the run of the show.
- Those employed in motion picture and theatre/stage productions may be required to work highly irregular hours with short deadlines. Some travel may be required to film in remote locations or accompany theatre and concert productions on tour.

Lighting technicians are routinely required to lift and carry equipment. Occasionally, they may be required to lift equipment weighing up to 25 kilograms or more.

Personal Characteristics

Lighting technicians must be able to:

- concentrate on the lighting during a production, respond quickly to technical problems and continue to observe safety precautions at the same time
- work as part of a team and gain the confidence of performing artists
- adapt to a variety of production styles and requirements
- meet deadlines
- keep up with changes in technology
- be able to improvise when the perfect tools are not available
- move heavy equipment safely (which requires a moderate level of physical fitness).

They should enjoy working with tools and electric/electronic equipment on tasks requiring precision, having clear guidelines for their work, and finding innovative ways to do things.

Educational Requirements

Lighting technicians need a basic understanding of electricity, colour theory, lighting equipment, light modifiers, dimmers and control desks, and must be able to apply their knowledge in a variety of situations. Some knowledge of electronics is an asset.

In the past, many lighting technicians learned on the job. However, the field is becoming more and more technical and competition for positions is keen. Most employers prefer to hire people who have related education or experience. Creative talent and training is a definite asset for lighting technicians who want to advance in the field.

In Alberta, the following post-secondary institutions offer programs related to theatre, television and motion picture production:

- **Grant MacEwan College** in Edmonton offers a two year Theatre Production diploma program. The entrance requirement is a high school diploma with English Language Arts 30-1 or English 30 (or at least 75 per cent in ELA 30-2 or English 33).
- **Mount Royal College** in Calgary offers a two year Theatre Arts diploma in technical theatre. The entrance requirement is a high school diploma or equivalent. An interview may be required.
- The **Northern Alberta Institute of Technology (NAIT)** in Edmonton offers a two year Radio and Television diploma program. The entrance requirement is a high school diploma or equivalent with at least 60 per cent in English 30 or 33 and at least 50 per cent in Grade 11 math, science and social studies. Admission is competitive for this quota program.
- **Red Deer College** offers a two year Theatre Studies diploma program with a specialization in theatre technology and management. The entrance requirements are a high school diploma or equivalent with English 30 or 33, an interview and audition. Red Deer College also offers a two year post-diploma Bachelor of Applied Motion Picture Arts degree program with a specialization in motion picture production and management. The minimum entrance requirement is a grade point (GPA) average of 2.0/4 in a two year diploma in theatre, film or television, or equivalent experience.
- The **Southern Alberta Institute of Technology (SAIT)** in Calgary offers a two year Cinema, Television, Stage and Radio Arts diploma program. The entrance requirement is a high school diploma or equivalent with at least 60 per cent in English Language Arts 30-1 or 30-2 (or English 30 or 33). Admission is competitive for this quota program.
- The **University of Alberta** in Edmonton offers a four year Bachelor of Fine Arts degree program in Drama (Design, Technical Theatre). The entrance requirement is a minimum average of 60 to 80 per cent in English 30-1 and four of the following: Biology 30, Chemistry 30, Pure Math 30, Math 31, Physics 30, Social 30, 30-level languages other than English, fine arts subject (only one). Contact the faculty or department for specific requirements.
- The **University of Lethbridge** offers post-diploma and degree programs in drama with a technical/design major. The entrance requirement is an average of at least 60 per cent in English 30, three other appropriate 30-level subjects and a fifth Grade 12 subject.

Continuing education programs are often offered on an as needed basis. **The Banff Centre** offers a Theatre Production and Design program and a 14 week Media and Visual Arts program for people who have related experience.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

(section revised JANUARY 2006)

Lighting technicians are employed by:

- television stations, networks and cable companies
- film and motion picture production companies
- theatre and dance companies
- concert promoters
- trade shows
- lighting equipment manufacturers, suppliers and rental companies
- architectural lighting companies
- museums, theme parks and cruise ships
- post-secondary institutions.

In motion picture and theatre lighting, employment may be seasonal or short term and even experienced workers may experience periods of unemployment between jobs.

Experienced lighting technicians in large organizations may advance to supervisory positions such as head electrician, lighting director or gaffer. Further advancement generally requires post-secondary education (which may be acquired through specialized workshops and seminars).

Lighting technicians are part of the larger National Occupational Classification 5226: Other Technical and Co-ordinating Occupations in Motion Pictures, Broadcasting and the Performing Arts. In Alberta, over 75 per cent of people employed in this classification work in the **Information, Culture and Recreation** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Information, Culture and Recreation industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

About 550 Albertans are employed in the Other Technical and Co-ordinating Occupations in Motion Pictures, Broadcasting and the Performing Arts occupational group which is expected to grow 1.0 to 2.0 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover. (**Note**: Since lighting technicians form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for lighting technicians.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Rates of pay for lighting technicians vary depending on the nature of the work, location, and the skills and reputation of the worker.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Other Technical and Co-ordinating Occupations in Motion Pictures, Broadcasting and the Performing Arts occupational group working part-time or full-time earned from **$14,600 to $66,400 a year.** The average salary was **$28,900 a year.**

Other Sources of Information

EDinfo website: www.alis.gov.ab.ca/edinfo

Related Occupational Profiles

Electrician
Lighting Designer
Recording/Sound Engineer
Stage Manager

Related High School Subjects

Communication Technology; Electro-Technologies; Fine Arts (Drama); Language Arts; Mathematics; Physical Education; and Social Studies

Related Post-Secondary Fields of Study

Communications; and Fine Arts and Performing Arts

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Linguist

Produced NOVEMBER 2005

Linguists study human language and speech, and carry out scientific research on the structure, development and use of human languages.

NOC Number(s): 4169.5
Minimum Education: 4 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **I D M**

Duties

Linguists study language by analyzing:

- word meaning and the meaning of phrases and sentences
- the structure of phrases and sentences
- sound systems and their structure
- properties shared by human languages
- ways in which languages differ
- language development, use and change
- speech errors
- discourse structure
- the form and function of language.

Linguists may apply their knowledge in a wide variety of areas including:

- language disorders and the acquisition of language in children
- the function and role of language in various cultures
- the ways in which languages change over time and the ways in which this helps us understand our human history
- software and database development (natural language interfaces, document retrieval and information extraction from written text, machine translation)
- identifying speakers or writers for forensic purposes
- teaching language instructors and developing related guidelines, technical methodologies and instructional materials
- language and brain function
- development of language material for First Nations people
- language and word processing
- development of software for grammar checking
- dictionary development.

Working Conditions

Linguists often work standard hours in an office environment but some field work may be required for data collection. Teachers and researchers may work long hours (for more information, see the University Professor occupational profile).

Personal Characteristics

Linguists need the following characteristics:

- an interest in languages
- above average academic skills
- good skills at argumentation
- the ability to concentrate for long periods of time on precise, detailed work.

They should enjoy exploring things in depth and using research to find solutions to problems, making decisions and co-ordinating the work of others, and taking a methodical approach to their work.

Educational Requirements

The minimum education requirement in this field is a four year bachelor of arts (BA) degree with a specialization in linguistics. Additional graduate work is usually required. A BA provides a foundation for later graduate work in linguistics or the psychology of language, and for post-graduate training in translation, language teaching and speech/language pathology. A working knowledge of more than one language is required for advanced work in linguistics.

In Alberta, the following institutions offer post-secondary programs in linguistics:

- The **University of Alberta** in Edmonton offers four year BA and BA (Honours) degree programs in Linguistics, a four year BA degree program in Romance Languages with a specialization in Romance linguistics, a Master of Arts (MA) degree program in Japanese Linguistics, and Master of Science (M.Sc.) and Doctor of Philosophy (PhD) degree programs in Linguistics. The entrance requirement for the bachelor's degree programs is a competitive average (65 per cent to 80 per cent) in English Language Arts 30-1 or English 30, a 30 level language other than English or Pure Math 30 (or Math 30), and three other approved 30 level subjects (Social Studies 30 recommended).
- The **University of Calgary** offers four year and five year (co-op) BA degree programs, and MA and PhD degree programs in Linguistics. The entrance requirement for the bachelor's degree programs is a high school diploma or equivalent with a competitive average in English Language Arts 30-1 or English 30, Math 30 or 31 (or Pure Math 30) and three other approved Grade 12 subjects.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

(section revised JANUARY 2006)

Linguists who have at least a bachelor's degree may be employed by:

- the federal government
- private or public institutions
- overseas organizations in the field of educational development and literacy programs
- telecommunication agencies such as telephone companies
- commercial organizations such as software development companies.

Graduate degrees are required for speech pathology and for teaching/research positions in universities and colleges.

Advancement generally takes the form of being assigned more complex projects. Opportunities to advance to supervisory or management positions are limited.

Linguists are part of the much larger National Occupational Classification 4169: Other Professional Occupations in Social Science. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Professional and Technical Services**
- **Public Administration**
- **Educational Services**
- **Health Care and Social Assistance**

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 350 Albertans are employed in the Other Professional Occupations in Social Science occupational group which is expected to grow 1.5 to 2.5 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover. (**Note**: Since linguists form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for linguists.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Other Professional Occupations in Social Science occupational group working part-time or full-time earned from **$31,800 to $79,600 a year.** The average salary was **$54,900 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Canadian Association of Applied Linguistics website: www.aclacaal.org

Canadian Linguistics Association website: www.chass.utoronto.ca/~cla-acl/

Related Occupational Profiles

Anthropologist
Audiologist
Interpreter
Speech-Language Pathologist
Translator

Related High School Subjects

Communication Technology; Information Processing; Language Arts; Languages (other than English); Mathematics; and Social Studies

Related Post-Secondary Fields of Study

Humanities and Languages

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Livestock/Poultry Producer

Produced MARCH 2005

Livestock/poultry producers own, manage and direct farm operations that raise cattle, swine, sheep, poultry and alternative livestock.

NOC Number(s): 8251
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus below average occupational growth in Alberta
Interests: D M O

Duties

The duties of livestock/poultry producers vary depending on the livestock being raised and the purpose of the operation. In general, however, they:

- determine market requirements and select breeding stock
- breed animals using recognized breeding practices to ensure continuous improvement of herds or flocks
- attend animals during birthing if required
- feed and water animals during each stage of their growth and development (in most cases, this is an automated process)
- control the spread of disease and parasites through vaccination and medication and by separating sick animals from the rest
- maintain proper sanitary conditions and ventilation in barns and other enclosures, and manage waste (manure)
- maintain pasture or grazing lands to ensure animals have enough feed
- purchase, produce, process and store livestock feed
- provide humane transport for livestock
- participate in developing and implementing quality assurance programs
- use computer applications to keep production, breeding and financial records
- evaluate marketing alternatives (packing plants, public stockyards or rural auction markets)
- maintain enclosures and handling systems
- repair and maintain barns, buildings, equipment and machinery.

The also may:

- produce, harvest and store feed crops
- recruit and supervise staff.

Breeders of purebred animals also:

- keep detailed records of identification, performance and pedigree which provide the basis for genetic improvement and sale prices
- develop screening programs to continually improve the herd/flock by culling lower quality animals
- promote their animals to increase market opportunities.

In automated operations, producers must:

- continually clean and sterilize equipment
- monitor the equipment being used
- repair equipment as needed.

Livestock producers usually specialize in one type of operation.

Beef cattle producers own or manage three types of operations:

- Commercial cow-calf operators raise calves for their meat and market them through private sale, public stockyards or rural auction markets.
- Purebred cow-calf operators raise a particular breed of purebred cattle to sell as breeding stock to commercial herds.

- Feedlot operators feed calves or yearlings to a particular level of finish (fatness) before selling them to packing plants for slaughter.

Swine producers own or manage two types of operations:

- Commercial swine producers keep breeding stock for producing piglets or purchase piglets from other producers, and raise piglets to market weight.
- Purebred swine breeders raise purebred hogs for sale as breeding stock to commercial swine producers.

Poultry producers own or manage two types of operations:

- Egg producers ensure the steady production of high quality eggs for consumption or for hatcheries.
- Commercial chicken or turkey producers raise chickens and turkeys for meat and market their meat birds to processing plants located throughout the province.

Sheep farmers/ranchers own or manage three types of operations:

- Purebred breeders supply the sheep industry with top quality breeding stock of various breeds.
- Commercial lamb producers maintain a flock of ewes to produce wool and raise lambs for slaughter.
- Feedlot lamb producers feed lambs obtained from commercial herds on special rations until they are ready for slaughter.

Alternative livestock producers own or manage non-traditional types of livestock operations:

- Breeding stock producers raise animals to supply industry with quality breeding males and females.
- Other producers raise animals for slaughter or for the collection of by-products.

Working Conditions

Livestock/poultry producers spend a great deal of time outdoors in all types of weather conditions. The hours of work are long and at times irregular. Because livestock must be cared for daily, producers must make alternate arrangements before leaving their operations for extended periods.

Although automation and mechanization have helped to make the work less tedious and physically demanding, heavy labour is sometimes required.

Personal Characteristics

Livestock/poultry producers need the following characteristics:

- excellent health
- good organizational skills
- patience, a positive attitude, a high level of personal commitment and a high tolerance for financial risk
- the ability to work independently
- good business skills
- a high degree of self-discipline and resourcefulness.

They should enjoy taking responsibility for their operations, taking a methodical approach to their work, and driving and operating machinery and equipment.

Educational Requirements

(section revised APRIL 2005)

Livestock producers must have a good working knowledge of:

- animal behaviour, nutrition, breeding and genetics
- animal/bird health and veterinary medicine
- herd/flock management and performance indicators
- marketing and market alternatives
- risk management tools for pricing and production.

They must know where to obtain or how to grow the feed necessary for the particular kind of livestock they have, how to manage feeding, when and how to market their product, and how to keep complete and accurate financial and production records.

Individuals acquire the required knowledge and experience by working on farms and taking related education programs.

The **Alberta Green Certificate Farm Training Program** through **Alberta Agriculture, Food and Rural Development** provides training that qualifies individuals as farm technicians, farm supervisors or farm managers. This is

an apprenticeship-type program that combines practical on-farm experience and training with formal education in the form of home study courses, workshops, short courses or college agricultural courses. The Green Certificate Farm Training Program offers three levels of training:

1. farm technician (swine, dairy, cow-calf, beef feed lot, sheep, crop and irrigated crop) may require a year to complete.
2. herdsman or production supervisor may require two or more years to complete.
3. farm business manager may require three or more years of training.

Applicants for the Green Certificate Farm Training Program must be at least 15 years of age, and have a supportive farm trainer and job site. Trainees who are also high school students can receive high school diploma credits in an approved optional curriculum for achieving a Green Certificate.

In Alberta, the following post-secondary institutions offer related education programs.

- **Lakeland College** in Vermilion offers:
  - a two year Livestock Production diploma program. The entrance requirement is a high school diploma with English Language Arts 30-1 or English 30 (or at least 65 per cent in ELA 30-2 or English 33), Applied or Pure Math 20 (or Math 20 or 23), and one of the following: Biology 20, Chemistry 20, Physics 20 or Science 20.
  - a two year Animal Science Technology diploma program.The entrance requirement is a high school diploma with English Language Arts 30-1 or English 30 (or at least 65 per cent in ELA 30-2 or English 33), Pure or Applied Math 20 (or Math 20 or 23), Chemistry 30 and Biology 30.
- **Lethbridge Community College** offers a two year Agricultural Technology diploma program with a specialization in animal science. The entrance requirement is a high school diploma or equivalent. Math 33, Biology 30 and Chemistry 30 are recommended.
- **Olds College** offers a two year Agricultural Production and Management diploma program with a livestock major (beef, swine or diversified livestock). The entrance requirement is a high school diploma or equivalent with English Language Arts 30-1 or 30-2 (or English 30 or 33) and at least 55 per cent in Math 20 or 23 and in Biology 20, Chemistry 20 or Science 30. Olds College also offers an Agricultural Business diploma program, and a Bachelor of Applied Agricultural Technology and Entrepreneurship degree program.
- The **University of Alberta** Faculty of Agriculture, Forestry and Home Economics in Edmonton offers four year Bachelor of Science (B.Sc.) degree programs in Agriculture, and Agricultural/Food Business Management. The entrance requirement for the Agriculture program is a high school diploma with a minimum average (65 to 80 per cent) in English 30, Pure Math 30 (or Math 30), Biology 30, Chemistry 30 and one other approved 30-level subject. The entrance requirement for the Agricultural/Food Business Management program is completion of the first year of the Agriculture program with a grade point average (GPA) of at least 2.7/4.
- The **University of Lethbridge** offers four year degree programs in Agricultural Studies. The entrance requirement for the Bachelor of Arts degree program in Agricultural Studies is an average of at least 65 per cent in English 30, Math 30 or Pure Math 30 (or Math 33 or Applied Math 30), two other 30-level subjects plus a fifth Grade 12 subject (Biology 30 is recommended). Admission to the Bachelor of Science degree program in Agricultural Studies requires Biology 30, Chemistry 30, and Math 30 or Pure Math 30. The University of Lethbridge also offers post-diploma degrees in Agricultural Studies for graduates of approved agricultural diploma programs. Entrance requirements are specific to each college partner but, in general, a college GPA of at least 2.5/4 is required.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Other Requirements

Some operations are controlled by government regulated quotas. Producers must obtain a quota before they can market poultry.

Employment and Advancement

(section revised JANUARY 2006)

Some livestock/poultry producers own their own operations; others are employed as farm managers. Many people enter the business as labourers or technicians, or through membership in a family-owned partnership or corporation. Due to the enormous capital and operating costs involved in getting into livestock production, it is advantageous for individuals who do not have a farm background to learn all aspects of farming operations.

Individuals seeking employment on farms should contact a local Human Resources Development Canada office. Work

on a farm may be seasonal and sometimes casual. On livestock operations, farm supervisors and machinery operators may be hired on a year-round basis.

Experienced producers with formal training may move into related positions such as livestock services representative or agricultural commodity inspector.

Livestock and poultry producers are part of the larger National Occupational Classification 8251: Farmers and Farm Managers. In Alberta, most people employed in this classification work in the **Agriculture** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Agriculture industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 35,950 Albertans are employed in the Farmers and Farm Managers occupational group which is expected to grow up to 0.5 per cent each year from 2005 to 2010 in Alberta. (**Note**: Since livestock and poultry producers form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for livestock and poultry producers.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Annual incomes for self-employed livestock/poultry producers vary greatly depending on the type of operation, market trends and operating expenses.

Managers negotiate their own contracts and salaries.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Farmers and Farm Managers occupational group working part-time or full-time earned from **$16,200 to $83,200 a year.** The average salary was **$39,000 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

Alberta Chicken Producers (ACP) website: www.chicken.ab.ca

Alberta Pork website: www.albertapork.com

Alberta Turkey Producers (ATP) website: www.abturkey.ab.ca

Canadian Cattlemen's Association (CCA) website: www.cattle.ca

Related Occupational Profiles

Dairy Producer
Farm Worker/Technician
Grain and Forage Crop Producer
Market Gardener
Swine Technician

Related High School Subjects

Agriculture; Construction Technologies; Electro-Technologies; Enterprise and Innovation; Financial Management; Language Arts; Management and Marketing; Mathematics; Mechanics; Physical Education; and Science (Biology; and Chemistry)

Related Post-Secondary Fields of Study

Agriculture and Related Technologies

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Locksmith

Apprenticeship and Industry Training

Produced FEBRUARY 2006

Locksmiths install, adjust and repair locks, make keys and change lock combinations. They work on residential, automotive, commercial and institutional locksets and door hardware. Locksmiths may also install and maintain more sophisticated security systems.

NOC Number(s): 7383.2
Minimum Education: Apprenticeship Trade - Grade 10
Employment Outlook: Employment turnover plus below average occupational growth in Alberta
Interests: **O M i**

Duties

Duties vary from one position to another but, in general, locksmiths:

- sell and install high security lock systems and key control systems, window bars, deadlocks and keyless entry locks
- repair, replace or adjust damaged or defective components of entrance and exit doors, including door closers, hinges, electric release mechanisms and sometimes the door itself
- change lock key combinations by inserting new pins into locks
- design complex master key systems for industry, governments and institutions.

Specific duties vary depending on where locksmiths work.

Shop locksmiths are responsible for:

- servicing and adjusting key machines
- repairing locks
- re-keying locks
- making keys for locks
- opening cylinders when keys are not available
- preparing master keys from code
- repairing or making keys for auto locks brought into the shop.

Mobile locksmiths are required to work from mobile units. They are skilled in the duties of shop locksmiths and key duplicators. They are also responsible for:

- repairing locks in the field
- opening door locks with a lock pick
- opening and making keys for automobiles
- installing locks, door closers and emergency exit hardware
- replacing hinges and re-aligning doors
- installing security bars
- installing and repairing electric strikes and electronic security hardware
- servicing and changing combinations on safe and vault doors.

Safe and vault technicians have additional training in safe and vault servicing and trouble shooting. They open, rebuild, paint, move and install safes.

Locksmiths who service bank equipment work with mechanical and electronic time locks, time delay devices, night deposit units, combination, electronic and key locks for vaults and safes.

Working Conditions

Some shops, especially mobile units, may be small and crowded, requiring locksmiths to work around benches, counters and stock. Sometimes they are required to work in awkward and confined spaces. Those working in mobile units may be required to work in adverse weather conditions.

Locksmiths usually work a five-day week but may be on call nights and weekends to respond to emergencies. Self-employed locksmiths often work longer hours.

Locksmiths may be required to move safes weighing over 25 kilograms.

Personal Characteristics

Locksmiths need the following characteristics:

- mechanical ability
- good mathematical ability
- good customer service skills
- patience and stamina
- good physical health
- good vision and hearing
- good hand-eye co-ordination when working with small and intricate parts
- reliability and honesty
- the ablity to work independently
- the ability to keep up to date with changing technology.

They should enjoy doing precision work, problem-solving and helping people.

Educational Requirements

To work in Alberta, locksmiths must be ONE of the following:

- registered apprentices
- certified journeymen
- working for an employer who is satisfied that they have the skills and knowledge expected of certified journeymen
- self-employed.

To **register** with **Alberta Apprenticeship and Industry Training**, apprentices must:

- have at least an Alberta Grade 10 education (or equivalent) or pass an entrance exam
- find a suitable employer who is willing to hire and train an apprentice. Most employers prefer to hire high school graduates and may select apprentices from among their current employees. To be eligible to be an apprentice, a person must also hold a pick license issued under section 353 of the Criminal Code (Canada). The license is issued by Alberta Justice. Persons with a criminal record are ineligible to obtain a pick license or work as a locksmith. Knowledge of computers, electronics, welding, carpentry, and metal work is an asset.

The **term of apprenticeship** is four years (four 12-month periods) that include a minimum of 1,560 hours of on-the-job training and eight weeks of technical training each year. High school students can become apprentices and gain credits toward apprenticeship training and a high school diploma at the same time through the Registered Apprenticeship Program (RAP).

Apprentices are also required to provide their own tools. Most shops supply major specialized tools.

Applicants who have related training or work experience may be eligible for credit or certification.

Technical training is arranged by Alberta Apprenticeship and Industry Training and is currently offered at the Red Deer College in Sherwood Park.

Red Deer College also offers technical training by distance delivery in Sherwood Park.

Competency-Based Apprenticeship Training (CBAT) is also offered by Red Deer College.

Outside the apprenticeship program, **Red Deer College** offers a one year Locksmith certificate program by distance through Continuing Education. There are no formal admission requirements. Red Deer College also offers a 12-week in class introductory course.

Pre-employment programs for prospective apprentices and continuing education programs for journeymen may be offered on an as needed basis by the institution(s) listed above or other schools.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Experienced locksmiths can continue to upgrade their skills through the **Professional Locksmiths Association of Alberta** and other trade associations

Employment and Advancement

Locksmiths are employed by locksmithing companies, security firms and institutions.

Experienced locksmiths can advance to supervisory positions or set up their own businesses. Alberta certified journeyman locksmiths who have the supervisory or management skills required by industry may apply for an Achievement in Business Competencies Blue Seal by contacting Alberta Apprenticeship and Industry Training.

Most locksmiths consider this to be a life-long occupation. The increasing public awareness of the need to protect against theft is creating a need for more security measures, so the demand for locksmiths is anticipated to remain fairly stable.

Locksmiths are part of the larger National Occupational Classification 7383: Other Trades and Related Occupations. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Management, Administrative and Other Support Services**
- **Wood Products Manufacturing**
- **Repair, Maintenance, Personal and Other Services**
- **Agriculture**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

About 1,100 Albertans are employed in the Other Trades and Related Occupations group, which is expected to grow 0.3 to 1.3 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover. (**Note**: Since locksmiths form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for locksmiths.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Apprentice locksmiths earn 60 per cent of the journeyman wage rate in their place of employment in the first year, 70 per cent in the second, 80 per cent in the third and 90 per cent in the fourth. According to the Alberta Provincial Apprenticeship Committee for this trade, journeyman wage rates vary, but generally range from **$17 to $25 an hour plus benefits** (2005 estimate).

According to the **2005 Alberta Wage and Salary Survey**, Albertans working part-time or full-time in the Locksmiths occupational group earned **up to $42,400 a year**. Those with three years of experience earned from **$27,600 to $34,000 a year.** The average salary was **$32,500 a year**.

Other Sources of Information

Alberta Apprenticeship and Industry Training website: www.tradesecrets.org

Post-secondary institution calendars or websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Construction Sector Council website: www.csc-ca.org

Professional Locksmiths Association of Alberta website: www.plaa.org

Related Occupational Profiles

Security Alarm Installer

Related High School Subjects

Construction Technologies; Electro-Technologies; Fabrication Studies; Language Arts; Mathematics; and Physical Education

Related Post-Secondary Fields of Study

Trades, Industrial and Related Training

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Logging/Forestry Equipment Operators

Produced JANUARY 2006

Logging/forestry equipment operators use machinery and equipment to fell, process and load trees at logging sites.

NOC Number(s): 8241.1
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus below average occupational growth in Alberta
Interests: O m i

Duties

Logging/forestry equipment operators perform a broad range of logging operations to mechanically harvest timber (convert standing trees into forms suitable for use in mills). They operate complex machines which are often tracked or rubber-tired for travelling over rough terrain. Operating these machines may require manipulating levers and foot pedals, or using on-board computers to monitor and control operations.

Depending on the harvesting method being used, several logging/forestry equipment operators may be required at each logging site:

- **Feller-buncher operators** operate tracked, backhoe-like machines that cut trees at the base and pile them in bunches in preparation for being moved elsewhere.
- **Delimber operators** operate machines that remove rot and limbs from felled trees and trim tops to meet required specifications.
- **Harvesters** operate machines that can fell, de-limb and cut trees into logs of full or shortwood lengths. The logs are then bunched into piles for delivery to roadsides.
- **Skidder operators** operate rubber tired, four wheel drive machines that are used to move trees from the cutblock to the roadside and pile trees in a way that allows easy access for delimber or process operators.
- **Processor operators** operate machines that process trees at the roadside. This usually involves stripping limbs, cutting logs into predetermined lengths and piling them for loading.
- **Forwarder operators** operate forwarder machines to transport wood that has been cut to lengths to the roadside.
- **Log loader operators**, sometimes called butt'n'top loaders or picker truck operators, load logs piled at roadsides onto logging trucks for transport to mills. Log loaders look much like cherry pickers with mechanical grapple tongs that grip logs for lifting. Log loader operators raise logs as smoothly and accurately as possible and place them on logging truck trailers to form balanced loads within legal axle-weight limits.
- **Portable chipper operators** operate machines which reduce whole trees to chips and blow them into tractor-trailer units. The chips are then hauled to pulp or paper manufacturing plants.

Although the work of logging/forestry equipment operators is often repetitious, it takes skill and concentration. To operate increasingly sophisticated equipment, operators must have the knowledge required to make harvesting decisions that can have a long term impact on the forest. For example, tree processor operators must know about log quality and be able to interpret printouts generated by on-board computers. They also must be able to maintain complex equipment.

Working Conditions

Logging/forestry equipment operators may work primarily in comfortable cabs or outdoors in noisy environments or extreme weather conditions. They may work on steep, wet or uneven terrain. Operators regularly lift items weighing up to 10 kilograms and occasionally are required to manually lift loads weighing up to 25 kilograms.

Hours of work may include 12 hour shifts and night shifts. Operators may commute daily to the logging site or be away from home for periods of a week or more in isolated logging camps.

Logging/forestry equipment operators are exposed to hazards associated with operating heavy equipment and working in a forest environment. Health and safety risks have been greatly reduced through advances in technology, safety engineering and operating procedures.

Personal Characteristics

Logging/forestry equipment operators need the following characteristics:

- strength and stamina
- good eye/hand co-ordination
- the ability to judge distances accurately
- the ability to remain alert while performing repetitious tasks
- the ability to make quick decisions
- an interest in working in a forest environment
- the ability to work effectively as members of a team
- the communication skills required to pass oral exams and handle the required paper work.

Operators should enjoy driving and operating heavy equipment, having clear rules and organized methods for their work, and servicing machinery.

Educational Requirements

There are no formal educational requirements for logging/forestry equipment operator occupations. However, applicants must be able to read manuals and other materials that are written at a Grade 9 reading level.

Before they are allowed on site, new hires may be required to have:

- a first aid certificate
- Workplace Hazardous Materials Information Systems (WHMIS) training
- Transport of Dangerous Goods (TDG) training
- Sour Gas (H2S) training.

The following qualifications would be definite assets when seeking employment:

- related experience or training (for example, in heavy equipment operation or the use of global positioning and data systems)
- wildlife safety training
- chain saw certificate
- equipment maintenance and service training
- a high school diploma
- forestry or environmental courses (for example, training related to water course crossing, harvesting ground rules, log quality).

In Alberta, the **Northern Lakes College** in Grouard offers a 12 week Woodland Equipment Operator program that includes theory, practicum and simulator training. The entrance requirement is Grade 10 English and math, or mature student status; and a valid Class 5 driver's license. Applicants must complete a health status form and a career investigation.

Most companies provide on-the-job training under the supervision of an experienced, competent worker. The length of the training period varies with the type of machine and the trainee's ability but usually takes about six months. On-the-job training may be supplemented by a few weeks of training sponsored by an equipment manufacturer.

Trained logging/forestry equipment operators must be able to:

- accurately identify tree species
- employ efficient, sound felling and logging practices
- maintain equipment effectively
- read maps
- adapt methods to suit local conditions.

A working knowledge of provincial harvesting rules and regulations governing logging is essential to minimize environmental damage.

Because machinery maintenance is required during the off season and when breakdowns occur, operators should have the mechanical skills required to handle minor repairs and recognize major problems.

Employment and Advancement

Logging/forestry equipment operators are employed by:

- logging contractors
- forestry and lumber companies
- pulp and paper companies
- oil and gas companies (for right-of-way cutting).

Logging/forestry equipment operators often work on a seasonal basis in Alberta, usually from September/October to March/April (depending on the arrival/departure of frost and how wet the ground is). Private contractors may work on a year-round basis depending on the method of logging and where cut blocks are located. Many companies combine their logging operations with other heavy equipment work to create year-round employment.

Operators may advance from operating simpler machines to more complex machines, or move into operating other heavy duty equipment such as backhoes, crawler tractors, scarifiers and graders (for more information, see the Heavy Equipment Operator profile). Those who have several years of work experience and demonstrated leadership abilities may advance to crew foreman and supervisory positions. Some purchase their own equipment and become private contractors.

Logging/forestry equipment operators are part of the National Occupational Classification 8241: Logging Machinery Operators. In Alberta, most people employed in this classification work in the **Forestry and Logging** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- time of year (see above)
- trends and **events** affecting overall employment (especially in the Forestry and Logging industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 850 Albertans are employed in the Logging Machinery Operators occupational group which is expected to grow 0.3 to 1.3 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover which is relatively high in this occupation.

Salary

Hourly wages for logging/forestry equipment operators vary depending on the employer and the type of work performed. Some logging/forestry equipment operators work on a piecework basis (their pay is based on the volume and quality of work performed).

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Logging Machinery Operators occupational group working part-time or full-time earned from **$30,200 to $68,000 a year.** The average salary was **$52,200 a year.**

Other Sources of Information

Forest Industry Suppliers and Logging Association website: www.fisla.com

Woodlands Operations Learning Foundation website: www.w-o-l-f.ca

Related Occupational Profiles

Forest Technician
Heavy Equipment Operator

Related High School Subjects

Community Health; Electro-Technologies; Forestry; Mathematics; Mechanics; Physical Education; and Wildlife

Related Post-Secondary Fields of Study

Environment, Forestry and Related Studies; and Trades, Industrial and Related Training

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Machinist

Apprenticeship and Industry Training

Produced FEBRUARY 2006

Machinists set up and operate precision metal cutting and grinding machines such as lathes, milling machines, drills and grinders to manufacture and repair products made from metals, plastics, rubber textiles, fibreglass and space age alloys.

NOC Number(s): 7231.1
Minimum Education: Apprenticeship Trade - Grade 11
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: **O I M**

Duties

Machinists work according to very precise specifications. When there are no blueprints or other specifications, they determine dimensions by logic or by measuring samples using instruments such as micrometers and vernier calipers. Electronic instruments have digital readouts and require the operator to program them for use.

Duties vary from one position to another but, in general, machinists:

- study specifications, charts, drawings or sample parts to determine the machining operation to be performed
- calculate dimensions and tolerances, and prepare working sketches if necessary
- measure and mark the metal
- set up and operate tools, which may be computer numerically controlled, to perform precision machining operations
- fit parts to mechanisms and verify dimensions.

Machinists must understand the effects of heat treatment on metals and be skilled in the performance of various heat treatment processes.

Machinists may work in two types of shops:

- In **job shops**, they make a wide variety of repair parts for many different types of machinery and industrial equipment in situations where waiting for a stock part might jeopardize production schedules.
- In **production shops**, they produce parts using mass production methods. In Alberta, small production runs are more typical.

Working Conditions

Machinists usually work a 37.5 to 40-hour, five-day week but they may be required to work overtime in emergency situations. They may be on their feet for most of their shifts and work in shops that are noisy or dusty and with materials that are dirty. There is some risk of injury when working with sharp metals and power tools.

Machinists may be required to lift items weighing over 25 kilograms.

Personal Characteristics

Machinists need the following characteristics:

- the ability to use their hands skillfully and quickly
- mechanical ability
- the ability to estimate and measure sizes and distances accurately
- the ability to work independently at tasks that require concentration as well as physical effort.

They should enjoy doing creative work with machinery that requires a high degree of skill and precision.

Educational Requirements

To work in Alberta, machinists must be ONE of the following:

- registered apprentices
- certified journeymen
- working for an employer who is satisfied that they have the skills and knowledge expected of certified journeymen
- self-employed.

To **register** with **Alberta Apprenticeship and Industry Training**, apprentices must:

- have at least an Alberta Grade 11 education with a minimum of Math 10 or 13, Pure Math 10 or Applied Math 10 (or equivalent) or pass an entrance exam
- find a suitable employer who is willing to hire and train an apprentice. Most employers prefer to hire high school graduates and may select apprentices from among their current employees. Machinists also require basic computer knowledge.

The **term of apprenticeship** is four years (four 12-month periods) that include a minimum of 1,560 hours of on-the-job training and eight weeks of technical training each year. High school students can become apprentices and gain credits toward apprenticeship training and a high school diploma at the same time through the Registered Apprenticeship Program (RAP).

Applicants who have related training or work experience may be eligible for credit or certification.

Machinist apprentices may attempt the Interprovincial Exam in the final period of their apprenticeship training and, if successful, are granted a Red Seal (which is recognized in most parts of Canada).

Technical training is arranged by Alberta Apprenticeship and Industry Training and is currently offered at:

- the Northern Alberta Institute of Technology (NAIT) in Edmonton
- the Southern Alberta Institute of Technology (SAIT) in Calgary.

Outside the apprenticeship program, the following post-secondary institutions offer related training:

- the **Northern Alberta Institute of Technology (NAIT)** in Edmonton offers a one year CNC Machinist Technician certificate program. The entrance requirement is Grade 10 with Applied Math 10 or Pure Math 10 and English.
- the **Southern Alberta Institute of Technology (SAIT)** in Calgary offers a one year Machinist Technician certificate program. The entrance requirement is at least 70 Alberta high school credits or equivalent with English 20 or 23 or English Language Arts 20-1 or 20-2 and Pure Math 20, Applied Math 20 or Math 23.

Pre-employment programs for prospective apprentices and continuing education programs for journeymen may be offered on an as needed basis by the institution(s) listed above or other schools.

For current information about programs and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

Some machinists are employed wherever equipment is manufactured or repaired. Others work for large organizations such as government departments, or repair and maintenance companies. Employment is reasonably steady for most machinists. However, employment for machinists who work in industries such as oil field component production may be seasonal.

Experienced machinists may advance to positions such as inspector, foreman or superintendent. Alberta certified journeyman machinists who have the supervisory or management skills required by industry may apply for an Achievement in Business Competencies Blue Seal by contacting Alberta Apprenticeship and Industry Training. Some machinists start small job shops of their own.

Machinists are part of the larger National Occupational Classification 7231: Machinists and Machining and Tooling Inspectors. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Metals, Metal Fabrication and Machinery Manufacturing**
- **Other Manufacturing**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- time of year (see above)
- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta

- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

About 5,900 Albertans are employed in the Machinists and Machining and Tooling Inspectors occupational group which is expected to grow 2.4 to 3.4 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 140 to 200 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since machinists form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for machinists.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Apprentice machinists earn at least 55 per cent of the journeyman wage rate in their place of employment in the first year, 65 per cent in the second, 75 per cent in the third and 85 per cent in the fourth. According to the Alberta Provincial Apprenticeship Committee for this trade, journeyman wage rates vary, but generally range from **$14 to $25 an hour plus benefits** (2005 estimate).

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Machinists occupational group working part-time or full-time earned from **$14,600 to $101,400 a year.** The average salary was **$49,300 a year.**

Other Sources of Information

Apprenticeship and Industry Training website: www.tradesecrets.org

Post-secondary institution calendars or websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Related Occupational Profiles

Millwright
Sawfiler
Tool and Die Maker
Welder

Related High School Subjects

Design Studies; Fabrication Studies; Information Processing; Language Arts; Mathematics; and Physical Education

Related Post-Secondary Fields of Study

Trades, Industrial and Related Training

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Magnetic Resonance Technologist

Produced JULY 2005

Magnetic resonance technologists operate medical diagnostic equipment that uses magnetic fields and radio waves to produce images of the body.

NOC Number(s): 3215
Minimum Education: 2 years post-secondary education/training
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: **O M I**

Duties

Magnetic resonance imaging (MRI) scanners create a strong magnetic field which causes hydrogen protons in body tissue to align with the magnetic field. When a radio wave is pulsed into the body at the resonance frequency of water, protons are flipped away from the static magnetic field. When the protons begin to re-align with the magnetic field, they emit a characteristic signature that the scanner detects and processes to produce an image. Three dimensional images are then mathematically compiled on computers for processing, manipulation and storage.

Magnetic resonance images are used to:

- study the vascular system
- detect tumors anywhere in the body
- study body chemistry and function
- image soft tissue structures such as muscles and tendons in the joints.

In general, magnetic resonance technologists:

- ensure the safety of patients, staff and visitors who come in contact with the powerful magnetic field of a MRI scanner
- explain procedures, answer patients' questions as fully as possible and provide emotional support
- position patients and cameras on a table that slides inside a large tube in the MRI scanner
- inject contrast media as required
- set appropriate technical parameters, operate MRI scanners and related equipment, and observe image data on computer monitors during scans
- guide and monitor patients during scans that may take up to 90 minutes to complete
- recognize and respond to life threatening situations
- assist in the education of other medical professionals
- keep records and compile research data
- routinely check scanners and related equipment.

Magnetic resonance technologists work closely with other health professionals and administrative support personnel.

Working Conditions

Magnetic resonance technologists work in hospitals and clinics. They are on their feet for much of their shifts and may be required to do some heavy lifting. Dealing with very sick patients can be stressful.

Working hours vary and may include extended afternoon or evening shifts. In hospital settings, technologists are sometimes on call.

Personal Characteristics

Magnetic resonance technologists need the following characteristics:

- a sense of responsibility and a high degree of integrity
- patience and adaptability

- sensitivity to the needs of ill and injured people
- the ability to put people at ease
- an interest in science and technology
- the ability to maintain a high level of accuracy in their duties
- good organizational skills
- good problem-solving and critical thinking skills
- the ability to work well in a team environment.

They should enjoy using equipment to perform tasks requiring precision, having procedures and standards for their work, and compiling information for research data and statistics.

Educational Requirements

In Alberta, the **Northern Alberta Institute of Technology (NAIT)** in Edmonton offers a 20 month (including practicum experience) Magnetic Resonance Imaging diploma program. The entrance requirement is a high school diploma with at least 60 per cent in English 30, Pure Math 30, Chemistry 30, Physics 30 and Biology 30.

Other Requirements

(section revised AUGUST 2005)

Under Alberta's Health Professions Act, only registered members of the Alberta College of Medical Diagnostic and Therapeutic Technologists (ACMDTT) may call themselves a Magnetic Resonance Technologist, Nuclear Medicine Technologist, Radiographic Technologist or Radiation Therapist. Registered members provide health services listed in Schedule 12 of the Health Professions Act.

Employment and Advancement

(section revised JANUARY 2006)

Magnetic resonance technologists are employed in large, urban hospitals and clinics. Without further education, advancement opportunities are limited.

Magnetic resonance technologists are part of the larger National Occupational Classification 3215: Medical Radiation Technologists. In Alberta, most people employed in this classification work in the **Health Care and Social Assistance** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Health Care and Social Assistance industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 1,850 Albertans are employed in the Medical Radiation Technologists occupational group which is expected to grow 2.7 to 3.7 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 40 to 70 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since magnetic imaging technologists form only a part of the larger occupational group on which this forecast is based, only a small portion of the new positions created will be for magnetic imaging technologists.)

Employment turnover is expected to increase as members of the baby boom generation retire.

Salary

(section revised OCTOBER 2005)

Full-time salaries for magnetic resonance technologists start at about **$50,000 per year (2005 estimate).**

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Medical Radiation Technologists occupational group working part-time or full-time earned from **$37,300 to $71,800 a year.** The average salary was **$57,600 a year.**

For information about current collective agreements in the public and not-for-profit sectors, see the Health Sciences Association of Alberta (HSAA) website.

Other Sources of Information

Post-secondary institution calendar and website (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta College of Medical Diagnostic and Therapeutic Technologists (ACMDTT) website: www.acmdtt.com

Canadian Association of Medical Radiation Technologists website: www.camrt.ca

Health Sciences Association of Alberta (HSAA) website: www.hsaa.ca

Related Occupational Profiles

Diagnostic Medical Sonographer
Electroneurophysiology (ENP) Technologist
Nuclear Medicine Technologist
Radiation Therapist
Radiological Technologist

Related High School Subjects

Community Health; Language Arts; Mathematics; Physical Education; and Science (Biology; Chemistry; and Physics)

Related Post-Secondary Fields of Study

Health Care and Medical Sciences

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Mail Sorter

Produced NOVEMBER 2005

Mail sorters collect, process and sort incoming and outgoing mail, parcels and oversized mail for dispatch and delivery.

NOC Number(s): 1461.2
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus below average occupational growth in Alberta
Interests: **M i o**

Duties

In the past, mail sorters manually sorted parcels into bags or bins and mail into pigeon holes in a case or mail rack. This still must be done for mail that for some reason cannot be sorted by machine. However, the vast majority of mail is sorted by machines operated by mail sorters in large mail and parcel processing plants.

Mail sorters' duties vary depending on the size and type of sortation plant. On a rotation basis, they may perform all or some of the following duties:

- accept and check containers of mail/parcels from large volume mailers, couriers and contractors
- lift and unload containers of mail/parcels onto equipment that transports items to sortation stations
- check items to ensure that addresses are legible and correct, that sufficient postage has been paid or the appropriate documentation is attached, and that items are in a condition suitable for processing
- segregate items requiring special handling
- clear jams in sortation equipment
- remove containers of sorted mail/parcels and transfer them to designated areas according to established procedures and deadlines
- perform related tasks such as opening and labeling mail containers.

In highly automated sortation plants, mail sorters:

- operate computer controlled keyboards or voice recognition equipment to direct items according to established routing schemes
- use equipment such as forklifts to move containers of mail.

In small post offices and outlets that provide private courier or parcel express services, mail sorters may perform a variety of other duties as well, including serving the public at a counter. Sorters employed by private courier services sort all types of freight.

In larger outlets, duties are divided among mail sorters and postal clerks (for more information, see the Postal/Wicket Clerk occupational profile).

Working Conditions

Mail sorters in urban areas usually work shifts in an environment that resembles an assembly line. Many work evening and night shifts. They may be on call or work part-time.

Mail sorters work in a fast-paced, time-sensitive environment and, despite the use of automated equipment, the work is often physically demanding. Mail sorters may spend most of their shift on their feet and routinely lift items weighing up to 22.7 kilograms.

Personal Characteristics

Mail sorters need the following characteristics:

- physical strength and stamina
- able to read quickly and accurately

- manual and finger dexterity
- a good memory.

They should enjoy having clear guidelines and organized methods for their work, meeting the challenge of accurately sorting quantities of mail within specified time periods, and operating automated equipment.

Educational Requirements

Mail sorters are trained on the job. For employment with Canada Post, job applicants must:

- have recent physical work experience
- have good references
- pass a series of practical and oral tests.

Mail sorters who operate Canada Post mail coding machines must learn to sort a minimum number of letters per hour within a specified training period. Rate and hour requirements vary depending on the type of coding machine. Experience in activities that require finger dexterity (e.g. typing or playing the piano) is helpful.

Employers in the private sector require similar qualifications. Warehouse experience is a definite asset.

Employment and Advancement

(section revised JANUARY 2006)

Mail sorters are employed by Canada Post or private courier/parcel express services. Sortation plants are generally located in major urban centres, often in industrial areas.

Canada Post hires prospective mail sorters as temporary employees who are on call. At first, they may work only a few days in a month. More than three years of seniority may be required to become a permanent employee. Private courier and parcel express services may hire new employees on a part-time basis only.

Mail sorters employed by Canada Post are members of the Canadian Union of Postal Workers (CUPW). Those employed by private sector companies may be required to join unions such as the Teamsters Union.

Many mail sorters stay in the occupation until they retire. Without additional education, advancement opportunities for experienced mail sorters are limited.

Mail sorters are part of the larger National Occupational Classification 1461: Mail, Postal and Related Clerks. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Transportation and Warehousing**
- **Information, Culture and Recreation**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

About 4,250 Albertans are employed in the Mail, Postal and Related Clerks occupational group which is expected to grow up to 1.0 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover. (**Note**: Since mail sorters form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for mail sorters.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Mail, Postal and Related Clerks occupational group working part-time or full-time earned from **$12,500 to $28,500 a year.** The average salary was **$17,100 a year.**

Hourly wages for mail sorters employed by Canada Post range from **$20.55 to $21.28 an hour (2005 figures)**.

Other Sources of Information

Canada Post website: www.canadapost.ca

Canadian Union of Postal Workers (CUPW) website: www.cupw-sttp.org

Related Occupational Profiles

Canadian Forces Personnel - Non Commissioned
Letter Carrier
Postal/Wicket Clerk
Shipper and Receiver
Warehousing Professionals

Related High School Subjects

Language Arts; and Physical Education

Related Post-Secondary Fields of Study

Personal and Food Services; and Trades, Industrial and Related Training

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For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Make-Up Artist

Produced MAY 2003

Make-up artists prepare performers for stage, television and film appearances and photography shoots by applying make-up to portray a physical character, enhance beauty or create special effects.

NOC Number(s): 5226.5
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **O M I**

Duties

Make-up artists work with news broadcasters and actors in television, motion picture, stage and theatre productions. In general, they assess performers' skin to ensure that make-up will not cause break-outs or skin irritations, and use make-up to:

- enhance performers' features for close-up camera shots or the scrutiny of a live audience
- restore the normal colour values of the hands and face under bright production lighting
- create special features or effects such as scars, aging or a particular "look" for a character (e.g. evil or suspicious)
- create the illusion of a distorted or alien body (often with the assistance of three-dimensional prosthetics).

For each television, film or stage production, make-up artists analyze the script, noting events that affect each character's appearance (e.g. time period changes, weather elements, sickness, injuries) and plan for each scene. They meet with producers, directors and production designers to discuss the desired look for all characters and must integrate those wishes with those of the performer.

Make-up artists must duplicate their work precisely time after time (e.g. reproduce a bruise months later for the filming of a subsequent scene) because scenes are often shot out of order. Considerable research, testing and experimentation is required to create time period make-ups and special effects for science fiction and horror characters.

Working Conditions

Make-up artists may stand for many hours at their work. In film-making, a typical working day is 14 hours long but much of the time is spent watching and waiting.

Make-up artists work under pressure to finish the job within a set period. They may be required to travel to fairly remote location shoots for television or film, and work in all kinds of weather and terrain. The bags they carry to work sites may weigh up to 10 kilograms. Lifting requirements are considerably more for artists who must also carry things like stools and lighting equipment.

Personal Characteristics

Make-up artists need the following characteristics:

- good colour vision
- creativity and imagination
- confidence and an outgoing personality
- good communication and interpersonal skills
- flexibility and adaptability
- good time management skills
- the ability to take direction and accept criticism
- the ability to consistently create an environment in which performers can focus on their work
- the ability to work independently and with others in a team environment
- the ability to work long hours.

They should enjoy performing tasks requiring precision, compiling information about character requirements and developing innovative approaches to their work.

Educational Requirements

Make-up artists need skills and knowledge related to:

- the proper care and use of make-up and related equipment and accessories such as wigs, facial hair pieces and special adhesives
- hair styling techniques
- colour, shading, texture and mixing pigments, and the effect of light on pigment and how pigment affects colour
- the use of highlight and shadow to create the illusion of three dimensions
- airbrushing techniques
- skin care, esthetics, human anatomy and how aging affects the face and body
- the safe use of adhesives and solvents for the application and removal of prosthetics
- market their services.

Make-up artists must also be able to market their services and negotiate contracts.

There is **no minimum education requirement** in this occupation. However, successful completion of a Workplace Hazardous Materials Information System course and a Set Etiquette couse is required to work on an **International Alliance of Theatrical Stage Employees** project. A background in theatre or visual arts is a definite asset.

Prospective make-up artists must gain experience working under the supervision of recognized make-up artists. Make-up artists may acquire the skills and knowledge they need by taking related courses offered:

- in some high school drama programs
- in post-secondary drama programs (for more information, see the Actor occupational profile)
- by private vocational schools.

Prospective make-up artists are advised to discuss their education plans with program graduates and other make-up artists before enrolling in an education program.

Creating character make-up requires research. Make-up artists need to build and maintain files of people's faces representing different nationalities, historical periods, and interesting or unusual looks. They also need to build a portfolio of photographs or videotapes of their best work to show potential employers.

Make-up artists must supply their own equipment and make-up; a good basic make-up kit costs about a thousand dollars. Top make-up artists in Alberta may have eight to fifty thousand dollars worth of equipment and supplies, much of which must be replaced often. Larger film and television projects often pay a Kit Fee.

Other Requirements

Some theatre and television studios only hire IATSE members and require make-up artists to have insurance.

Employment and Advancement

Make-up artists usually work on a contract basis for:

- film and video production companies
- recording studios
- television studios
- theatre companies
- dance and opera companies
- photographers.

Most work opportunities are located in large urban centres. Until make-up artists establish contacts and build a reputation in the entertainment industry, they usually do other types of work as well. They may:

- do personal make-overs for people preparing for special occasions such as weddings, graduations, photography sessions or Hallowe'en
- work as sales clerks at cosmetic counters in department stores or as cosmeticians (for more information, see the Cosmetician and Esthetician occupational profiles)
- teach theatrical makeup or in the fashion and modelling industry
- do work for funeral homes.

They may also do volunteer work for local theatres, non-profit film companies or community cable television stations to gain experience and recognition.

In Alberta, even the most successful make-up artists do other types of work as well. The entertainment industry is limited and employers generally prefer to hire make-up artists they have worked with before.

Salary

(section revised OCTOBER 2005)

Fees depend on the nature of the contract and the reputation of the artist. In film and television, minimum rates are set by the IATSE collective agreement.

There are slow months of work as well as busy ones so make-up artists may need to supplement their incomes at times with other part-time jobs.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Other Technical and Co-ordinating Occupations in Motion Pictures, Broadcasting and the Performing Arts occupational group working part-time or full-time earned from **$14,600 to $66,400 a year.** The average salary was **$28,900 a year.**

Other Sources of Information

International Alliance of Theatrical Stage Employees (IATSE) website: www.iatse-intl.org

Related Occupational Profiles

Cosmetician
Esthetician
Hairstylist
Painter/Printmaker

Related High School Subjects

Cosmetology Studies; Fine Arts (Drama; and Visual Arts); Language Arts; Physical Education; Science (Chemistry); and Social Studies

Related Post-Secondary Fields of Study

Fine Arts and Performing Arts; and Personal and Food Services

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For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Management Consultant

Produced NOVEMBER 2005

Management consultants are contracted by organizations to provide independent and objective advisory services in areas such as strategic planning, facilitation, quality assurance, education and training, investment, information technology, identification and analysis of management problems, solution development or strategy implementation.

NOC Number(s): 1122.1
Minimum Education: 6 years post-secondary education/training
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: **I D S**

Duties

Organizations hire management consultants when they do not have the required resources or expertise in-house, or they need external objective advice. They may ask consultants to help them manage change or solve problems.

In general, management consultants:

- define the nature and extent of a project by gathering information (which may include conducting research to determine the current efficiency and effectiveness of managerial policies and procedures)
- analyze the data collected and use their background knowledge to develop proposals for improving methods, systems or procedures
- present their recommendations to the client organization and, if their recommendations are accepted, for implementing those recommendations.

Most management consultants specialize in particular fields (e.g. accounting, communications, finance, human resources, marketing, materials management, organizational restructuring, quality and efficiency). There are as many different types of specializations as there are types of business challenges. Following are a few possibilities:

- **Finance consultants** provide advice on matters such as pricing securities, business valuation and economic forecasting.
- **Human resources consultants** advise about recruitment practices, compensation and benefits packages, pension funding, workforce diversification and employee development programs.
- **Litigation consultants** work with lawyers to develop case strategies, courtroom exhibits and tactics, and provide economic analyses.
- **Marketing consultants** work with companies seeking innovative ways to market new or existing products and services.
- **Operations consultants** help organizations increase productivity by improving business processes.
- **Organizational change consultants** work with clients undergoing a fundamental reorientation in the way they operate.
- **Quality management consultants** help organizations improve the quality of their products and services.
- **Strategic consultants** help organizations with strategic planning for the foreseeable future (which may include developing a growth strategy, restructuring, marketing internationally, buying/selling assets or revitalizing leadership).
- **Technology consultants** help organizations implement new technologies (for more information, see the Information Systems Consultant occupational profile).

Working Conditions

Management consultants often work long hours. They divide their time between their own offices and clients' workplaces, and may spend a significant amount of time travelling. When observing industrial operations, they must follow the same safety procedures as other visitors and workers.

Management consultants work under the pressure of deadlines and clients' high expectations. Many clients expect to see dramatic improvements in business performance in a very short period of time. Within the client organization, consultants also may have to deal with hostile employees who are afraid of losing their jobs.

Personal Characteristics

Management consultants need the following characteristics:

- energy, confidence and creativity
- the ability to remain objective, think analytically, synthesize information and exercise good judgement
- good listening skills, tact and the ability to communicate with all kinds of people in person and in writing
- the ability to work effectively as part of a team
- the ability to recognize the dynamics and politics of an organization
- creative problem solving skills.

They should enjoy analyzing managerial methods and conducting research, taking charge of situations, and providing critical assessments and constructive advice.

Educational Requirements

Management consultants are experts in specific disciplines or business areas. A master's degree, preferably in business administration (MBA), is generally considered the best academic preparation for this field. However, a master's degree is not required. Some successful consultants have a bachelor's degree or years of experience in middle and upper levels of management.

Since management consulting covers many professional and industrial fields, bachelor's degrees in a variety of disciplines provide a suitable background for those wishing to go on to an MBA program. Bachelor's degree programs are offered by universities and colleges located throughout the province. Admission requirements vary but generally include a high school diploma with English Language Arts 30-1 and four other suitable 30 level subjects.

In Alberta, the following universities offer MBA programs:

- **Athabasca University** offers an MBA program via distance education. Applicants usually have a bachelor's degree or a professional designation (e.g. a professional accountant designation) or have successfully completed the Graduate Diploma in Management program **and** have three years of supervisory, professional or managerial experience. Applicants who have equivalent qualifications are considered.
- The **University of Alberta** in Edmonton offers full-time and part-time MBA programs and joint programs with other degrees. MBA students may focus on international business, natural resources and energy, technology commercialization, leisure and sport management, or public management. Applicants must have a B average (3.0 in a 4 point system) or equivalent academic standing in the last two years of a completed bachelor's degree program, pass a Graduate Management Admission Test (GMAT)and provide three letters of reference, a statement of intent and a resume outlining education, interests and work experience. Most students have two to five years of work experience before entering the MBA program.
- The **University of Calgary** Haskayne School of Business offers full-time and part-time MBA programs with specializations in finance, marketing, entrepreneurship and innovation, and global energy management and sustainable development. Applicants must have a 3.0 average or equivalent academic standing in the last two years of a completed bachelor's degree program, achieve at least 550 on the GMAT, and submit a resume, statement of purpose and three letters of appraisal. Three years of work experience is recommended..

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Other Requirements

Certified Management Consultant is a protected title under Alberta's Professional and Occupational Associations Registration Act. This means that to call yourself a Certified Management Consultant, you must be a registered member of the Institute of Certified Management Consultants of Alberta (ICMCA). You do **not** have to be registered if you do not call yourself a Certified Management Consultant.

Employment and Advancement

(section revised JANUARY 2006)

Management consultants are self-employed or employed by established consulting firms. Those who are self-employed must market their services, and establish and maintain professional credibility. This field is highly competitive.

Management consultants employed by consulting firms may become team leaders and, later, senior consultants. Only a relative few achieve the status of senior partner in large consulting firms.

After gaining experience as an employee in a consulting firm, many management consultants set up their own firms. Even experienced and respected managers who leave salaried positions to become consultants often must subcontract their services to established consultants to begin establishing their own client base.

Management consultants are part of the larger National Occupational Classification 1122: Professional Occupations in Business Services to Management. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Professional and Technical Services**
- **Oil and Gas Extraction**
- **Information, Culture and Recreation**
- **Finance, Insurance and Real Estate**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 10,250 Albertans are employed in the Professional Occupations in Business Services to Management occupational group which is expected to grow 2.8 to 3.8 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 280 to 390 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since management consultants form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for management consultants.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Income figures for business management consultants vary greatly. Those just starting out as self-employed consultants may make very little in their first years. Highly successful self-employed consultants may earn six-figure annual incomes.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Professional Occupations in Business Services to Management occupational group working part-time or full-time earned from **$11,500 to $179,800 a year.** The average salary was **$66,500 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Canadian Association of Management Consultants (CAMC) website: www.camc.com

Institute of Certified Management Consultants of Alberta (ICMCA) website: www.icmca.ca

Related Occupational Profiles

Advertising Account Executive
Banking/Investment Manager
Data Administrator
Economist
Health Service Administrator
Human Resources Professional
Information Systems Consultant
Market Research Analyst
Marketing Manager
Operations Manager
Operations Research Analyst
Recreation and Sport Administrator
School Business Official

Related High School Subjects

Enterprise and Innovation; Financial Management; Language Arts; Management and Marketing; Mathematics; Science; and Social Studies

Related Post-Secondary Fields of Study

Business, Management and Administrative Studies

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Manufacturing Engineer

Produced JUNE 2004

Manufacturing engineers design, implement, direct and co-ordinate manufacturing system materials and processes to achieve the most efficient, cost effective and high quality production possible in a safe and environmentally responsible manner.

NOC Number(s): 2141
Minimum Education: 4 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **I O D**

Duties

Manufacturing engineers are concerned with all the activities involved in the creation and production of industrial and commercial products such as:

- machinery and equipment
- consumer electronics (e.g. telephones, television sets)
- home appliances (e.g. refrigerators, toasters)
- home fixtures (e.g. furniture, windows)
- oil and gas products
- leisure equipment (e.g. snowboards, roller blades)
- food and beverages
- vehicles (e.g. cars, planes)
- clothing and textiles
- environmental and recycled products.

In general, manufacturing engineers use their knowledge of product design, materials and parts, fabrication processes, tooling and production equipment capabilities, assembly methods and quality control standards to develop, evaluate and improve manufacturing systems and methods. This may involve:

- working with planning and design staff on product design and tooling to ensure efficient production processes
- designing pay systems
- analyzing space requirements and workflow, and designing the layout of equipment and workstations to ensure maximum efficiency and an ergonomically sound work environment
- working with regulatory agencies to ensure safety, environmental and design standards are met
- deciding whether to produce parts and subassemblies inhouse or buy them from other companies
- setting production standards and changing production manufacturing methods and automating processes
- working with vendors to determine product specifications and arranging for the purchase of equipment, materials or parts
- estimating production times, staffing requirements and related costs
- designing, planning and setting up the equipment used to make products
- devising racks, bins and other containers to hold and protect parts and subassemblies
- anticipating future manufacturing requirements and potential.

In smaller companies, manufacturing engineers often have a wide range of responsibilities from the product development stage through to shipping the final product.

Manufacturing engineers may specialize in areas such as:

- product design (e.g. using computer aided design (CAD) software to design a product that meets performance, quality and cost targets; anticipating how products will impact society, including how they will be used and decomposed or recycled)
- process design and improvement (e.g. developing specifications for processes to optimize efficiency, developing new processes or automating existing processes)

- facility design (e.g. designing manufacturing facilities, selecting locations and equipment, designing materials handling systems)
- operations management (e.g. capacity management, production planning and control, production scheduling, inventory management and logistics)
- information systems (e.g. designing, implementing and operating advanced information systems for manufacturing systems throughout the enterprise).

Working Conditions

Working conditions vary from one employer to another. Manufacturing engineers may be required to observe appropriate safety precautions (e.g. use protective equipment such as hard hats or safety glasses) to avoid injury when working on the production floor. Some work in "clean rooms" where products are produced under rigid standards of cleanliness to prevent contamination.

Most manufacturing engineers work standard weekday office hours but overtime may be required to meet project deadlines. Some travel may be required to meet with vendors, suppliers and customers.

Personal Characteristics

Manufacturing engineers need the following characteristics:

- the ability to think in mathematical and abstract terms
- the ability to visualize three-dimensional objects from two-dimensional drawings
- an interest in technical processes
- persistence and determination when problem-solving
- well-developed communication skills in person, in writing and for group presentations
- good interpersonal skills and the ability to work as part of a team
- the ability to anticipate the effects of change.

They should enjoy:

- synthesizing information to develop flexible and integrated manufacturing systems and procedures
- using equipment and instruments to perform tasks requiring precision
- taking responsibility for projects and supervising the work of others.

Educational Requirements

Manufacturing engineers must have a **bachelor's degree in a related engineering discipline**. They need skills and knowledge in:

- engineering materials
- manufacturing processes and production methods
- process automation and robotics
- engineering design approaches and computer tools
- quality engineering
- human and organizational behaviour
- operations management (inventory control and production scheduling)
- manufacturing facility design
- business and financial issues
- information management systems
- technology management.

In Alberta, the **University of Calgary** offers four and five year Bachelor of Science (B.Sc.) degree programs in engineering with a specialization in manufacturing engineering. The five year program includes a 12 to 16 month work placement in the fourth year. The entrance requirement for both programs is a high school diploma with an overall average of at least 78 per cent in the following subjects: English 30, Chemistry 30, Math 30 or Pure Math 30, Math 31, and Physics 30.

For information about related programs of study, see the Industrial Engineer and Mechanical Engineer occupational profiles.

Post-secondary institutions throughout Alberta offer university transfer programs that allow students to apply up to two years of study toward university bachelor's degree programs. It is the student's responsibility to ensure that the courses they choose to take will be accepted for credit at the institution to which they wish to transfer.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Manufacturing engineers must keep up to date regarding technological advancements and new manufacturing techniques by participating in professional development activities and taking continuing education courses.

Other Requirements

(section revised OCTOBER 2004)

Under Alberta's Engineering, Geological and Geophysical Professions Act, you must be a registered member of the Association of Professional Engineers, Geologists and Geophysicists of Alberta (APEGGA) to practice as a Professional Engineer. You do **not** have to be registered if you work under the direct supervision of a Professional Engineer and do not call yourself a Professional Engineer.

Employment and Advancement

(section revised JANUARY 2006)

Manufacturing engineers are employed by manufacturing and processing companies, and consulting firms.

Experienced engineers may advance to administrative and management positions. Those who have graduate degrees may teach at the post-secondary level or conduct research.

Manufacturing engineers are part of the larger National Occupational Classification 2141: Industrial and Manufacturing Engineers. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Professional and Technical Services**
- **Other Manufacturing**
- **Metals, Metal Fabrication and Machinery Manufacturing**
- **Oil and Gas Extraction**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 900 Albertans are employed in the Industrial and Manufacturing Engineers occupational group which is expected to grow 1.5 to 2.5 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 10 to 30 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since manufacturing engineers form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for manufacturing engineers.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised SEPTEMBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Industrial and Manufacturing Engineers occupational group working part-time or full-time earned from **$25,700 to $113,200 a year.** The average salary was **$68,600 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Association of Professional Engineers, Geologists and Geophysicists of Alberta (APEGGA) website: www.apegga.org

Society of Manufacturing Engineers (SME) website: www.sme.org

Related Occupational Profiles

Ergonomist
Industrial Designer
Industrial Engineer
Operations Manager
Operations Research Analyst

Related High School Subjects

Communication Technology; Design Studies; Energy and Mines; Fabrication Studies; Information Processing; Language Arts; Logistics; Mathematics; and Science (Chemistry; and Physics)

Related Post-Secondary Fields of Study

Engineering, Architecture and Related Studies

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Mapping Technologist

Produced APRIL 2005

Mapping technologists gather, analyze, interpret and use geospatial information to define locations of natural and manmade features on, above and below the earth's surface. This information is used for applications in many fields (e.g. environmental and land use planning, natural resources, geology, agriculture).

NOC Number(s): 2255.1
Minimum Education: 2 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **I M O**

Duties

In general, mapping technologists design and prepare maps, interpret aerial photographs, operate interpretive and airborne remote sensing equipment, and develop and operate geographical information systems (GIS). Their duties vary from one position to another in this rapidly evolving occupation. They may:

- collect, manipulate and present data using ground surveys, remote sensing, photogrammetry (aerial photographs), laser ranging, global positioning systems (GPS) or hydrographic methods
- provide data to be used in geographical information systems (GIS)
- use information from GPS systems to determine geographic positions
- use digital mapping techniques, computer interactive graphics and computer assisted design and drafting (CAD) software to generate maps and related graphs and charts
- process digital data to compile geographic information in numeric and graphic formats
- process aerial and satellite photographs to produce rectified distortion free images, topographic maps, aerial-photo mosaics and related products
- operate analytical or soft copy stereoscopic plotting and computer graphics equipment
- plan control points and flight plans for aerial surveys
- operate airborne remote sensing equipment such as aerial survey, film or digital cameras, laser or radar sensors and scanners
- operate computer-based remote sensing interpretive equipment to prepare images, graphic and alphanumeric reports, maps and charts from airborne or satellite data
- verify the integrity and accuracy of data contained in remote sensing image analysis systems and extract survey and thematic information
- operate specialized computer hardware and software to model, manage, analyze and display geospatial data
- develop specialized computer software, internet-based GIS, database and business applications to customize geographic information
- integrate external software such as spreadsheets and statistical packages with GIS software
- train and provide technical support for GIS users.

Working Conditions

Mapping technologists work primarily in office environments in large or small cities. Sometimes, they use land, water or air transport to collect data in the field.

Personal Characteristics

Mapping technologists need the following characteristics:

- good mathematical skills
- good stereo vision
- the ability to pay close attention to details

- good communication skills
- good problem-solving skills.

They should enjoy generating maps, analyzing information to compile data and performing work that requires precision.

Educational Requirements

The recommended educational background for mapping technologists is a **two year diploma in geomatics engineering technology**. It is possible to learn on the job and take related courses part-time but not common.

In Alberta, the following post-secondary institutions offer related diploma programs:

- **Lethbridge Community College** offers a two year Geomatics Engineering Technology diploma program. The entrance requirement is a high school diploma or equivalent with Math 30 or Pure Math 30 (or at least 65 per cent in Math 33 or Applied Math 30), Physics 20 or Science 30, and at least 60 per cent in English Language Arts 30-1 (or English 30).
- The **Northern Alberta Institute of Technology (NAIT)** in Edmonton offers a two year Geomatics Engineering Technology diploma program. The entrance requirement is a high school diploma or equivalent with English Language Arts 30-1 or 30-2 (English 30 or 33), Pure Math 30 or equivalent, and one of the following: Science 30, Physics 30 or Chemistry 30. Part of this program is available through Continuing Education.
- **Olds College** offers a two year Geographical Information Systems diploma program. The entrance requirement is a high school diploma with English Language Arts 30-1 or 30-2 (English 30 or 33), Pure or Applied Math 20 (Math 20 or 23), Biology 20 and Chemistry 20 or Science 30. This program focuses on agricultural applications.
- The **Southern Alberta Institute of Technology (SAIT)** in Calgary offers a two year Geomatics Engineering Technology diploma program with specializations in surveying or mapping. The admission requirement is a high school diploma or equivalent with English 30 or 33, Pure or Applied Math 30, and Science 30 or Physics 20. English 30 and Pure Math 30 are recommended.

Graduates of these programs can transfer credits if they wish to enrol in the Bachelor of Applied Information Systems Technology degree program at SAIT, or Geomatics Engineering degree programs at the **University of Calgary** or the **University of New Brunswick**.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Other Requirements

Certification is voluntary.

The Alberta Society of Surveying and Mapping Technologies (ASSMT) offers four levels of Certified Survey Technician and Technologist (CST) certification based on a combination of education and experience in the surveying and mapping industry. In general, the more related education an applicant has, the fewer the years of experience required for certification.

The Alberta Society of Engineering Technologists (ASET) offers certification for graduates of two year diploma programs who have two years of successful experience in industry.

Employment and Advancement

(section revised JANUARY 2006)

Mapping technologists are employed by:

- private sector surveying and mapping companies
- forestry, architectural, engineering and other consulting firms
- computer software companies
- natural resource companies
- utilities
- all levels of government
- the Canadian Armed Forces.

Experienced mapping technologists may advance to supervisory positions in which they are responsible for other technologists and support personnel.

Mapping technologists are part of the larger National Occupational Classification 2255: Mapping and Related

Technologists and Technicians. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Professional and Technical Services**
- **Public Administration**
- **Oil and Gas Extraction**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 700 Albertans are employed in the Mapping and Related Technologists and Technicians occupational group which is expected to grow 1.0 to 2.0 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Mapping and Related Technologists and Technicians occupational group working part-time or full-time earned from **$27,900 to $66,300 a year.** The average salary was **$51,200 a year.**

Other Sources of Information

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Society of Engineering Technologists (ASET) website: www.aset.ab.ca

Alberta Society of Surveying and Mapping Technologies (ASSMT) website: www.assmt.ab.ca

Geomatics Industry Association of Canada (GIAC) website: www.giac.ca

Related Occupational Profiles

Civil Engineering Technologist
Engineering Design and Drafting Technologist
Geographer
Geomatics/Surveying Technologist
Land Surveyor

Related High School Subjects

Communication Technology; Design Studies; Energy and Mines; Information Processing; Language Arts; Mathematics; and Science (Chemistry; and Physics)

Related Post-Secondary Fields of Study

Engineering and Science Technologies

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Market Gardener

Produced MARCH 2005

Market gardeners grow fresh produce (vegetables, berries, herbs and spices) and flowers for sale directly to consumers at farmers' markets and through farm gate sales or u-pick operations.

NOC Number(s): 8251
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus below average occupational growth in Alberta
Interests: **D M O**

Duties

Market gardeners' duties vary with the seasons. In winter and early spring, they:

- determine the appropriate crops for local climate and soil conditions
- select crops and seed varieties
- develop plans for crop rotation, pest control, crop quantities and planting schedules
- order and purchase seeds or plants, equipment, fertilizer and other production materials and supplies
- plant seeds and plants
- grow seedlings in greenhouses for transplanting in the spring.

From spring to harvest time, market gardeners:

- prepare fields and seed beds
- plant crops
- irrigate and fertilize crops
- till and fertilize soil
- control weeds, diseases and insects.

Harvest activities vary with the type of crop. Market gardeners may:

- use specialized harvesters or harvesting aids
- create and maintain a market for crops by advertising and maintaining a regular presence at markets
- clean, trim, cool, grade, package and transport crops to market
- sell produce to customers at farmers' markets or at the farm on pick-your-own operations.

On a year-round basis, market gardeners:

- order, install and repair machinery and equipment
- hire and supervise staff
- keep detailed records regarding crops and operation schedules
- establish and develop marketing techniques and market outlets
- expand and improve their production and marketing knowledge and supervisory skills.

Because most market gardeners are business owners, they also have administrative duties related to the running of a small business.

Working Conditions

Market gardeners work indoors and outdoors in all kinds of weather. The work can be tedious and physically demanding (lifting loads weighing up to 25 kilograms may be required). However, garden tractors and machinery have reduced manual labour requirements.

There is no quiet period in the worklife of market gardeners. Growing a quality product and maintaining quality throughout the marketing process is essential to maintaining sales. During harvest season, speed is essential in getting crops off the field and to market. The first fresh fruits and vegetables to reach the market command the highest prices. Working hours may be long and irregular.

Market gardens are usually located close to major centres because sales potentials are determined by the number of potential customers within reasonable travelling distance.

Personal Characteristics

Market gardeners need the following characteristics:

- good physical health and stamina
- an interest in working with the land, plants and people
- good observation skills
- the ability to supervise and motivate others.

They should enjoy taking responsibility for their operations, taking a methodical approach to their work, and operating machinery and equipment.

Educational Requirements

Market gardeners need a working knowledge of:

- local soil and climate conditions
- weed, disease and insect problems and their control (including pesticide application)
- appropriate plants and plant cultivars (e.g. seeds)
- planting and harvesting techniques
- selling and marketing
- how to operate a small business.

A farm background is helpful but those who do not have a farm background may gain practical experience by working on a market farm and taking related courses.

Olds College offers:

- Horticulture certificate and diploma distance education programs.
- a one year collaborative Horticultural Technician program at Medicine Hat College. The entrance requirement is a high school diploma or equivalent with Grade 12 English and Grade 11 math, biology and chemistry.
- a two year Horticulture diploma program with a specialization in production horticulture. The entrance requirement is a high school diploma or equivalent with at least 55 per cent in Grade 12 English and Grade 11 math, biology and chemistry.
- a post-diploma Bachelor of Applied Science degree program in production horticulture. The entrance requirement is a diploma in horticulture from a recognized school, or equivalent, and four months of work experience in the horticulture industry.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Courses in horticulture are also offered by other sources:

- The **Alberta Farm Fresh Producers Association** provides marketing and production information through print materials, workshops and an annual Horticultural Congress and Trade Show.
- Local school boards often offer short horticultural and gardening courses.
- **Alberta Agriculture, Food and Rural Development** provides production and marketing information through its fruit/vegetable and agri-tourism programs.

The **Canadian Nursery Landscape Association** has a national certification program for retail garden centre employees. Members who wish to be certified must have at least 2,000 hours of industry experience (1,000 hours credit given for education), pass a written examination testing technical knowledge and pass a series of practical skills tests.

Employment and Advancement

(section revised JANUARY 2006)

Most market gardeners are self-employed small business owners. Some have large enough operations that they hire farm workers during busy seasons. These positions may allow a person to learn how a successful market garden operation is run.

New gardeners are advised to start with a small operation, growing crops that are relatively easy to cultivate and suited to local growing conditions. As they gain experience and learn customer preferences, market gardeners can expand to more demanding crops and novelty items to round out their operations.

Advancement in this occupation generally takes the form of building a larger business.

Market gardeners are part of the larger National Occupational Classification 8251: Farmers and Farm Managers. In Alberta, most people employed in this classification work in the **Agriculture** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Agriculture industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 35,950 Albertans are employed in the Farmers and Farm Managers occupational group which is expected to grow up to 0.5 per cent each year from 2005 to 2010 in Alberta. (**Note**: Since market gardeners form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for market gardeners.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

One of the most appealing features of market gardening is that substantial profits can be reaped from a small amount of land. Input costs for machinery are minimal so overhead costs are lower than for other types of farming. Much, however, depends on the weather, market demand and grower management. In general, market garden crops are more weather sensitive than traditional crops.

Market gardeners often supplement their income through other means. With the introduction of improved storage techniques, growers are able to keep storable crops and sell them during the winter months, providing per year-round income. Some smaller operations earn a secondary income from the sale of goods such as bedding plants or jams and jellies.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Farmers and Farm Managers occupational group working part-time or full-time earned from **$16,200 to $83,200 a year.** The average salary was **$39,000 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Farm Fresh Producers Association website: www.albertafarmfresh.com

Canadian Nursery Landscape Association (CNLA) website: www.canadanursery.com

Related Occupational Profiles

Beekeeper
Dairy Producer
Grain and Forage Crop Producer
Greenhouse Operator
Landscape Gardener
Livestock/Poultry Producer
Nursery Operator

Related High School Subjects

Agriculture; Financial Management; Language Arts; Management and Marketing; Mathematics; Physical Education; and Science (Biology; and Chemistry)

Related Post-Secondary Fields of Study

Agriculture and Related Technologies

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Market Research Analyst

Produced OCTOBER 2005

Market research analysts use data gathered about marketplace participants (customers, employers and competitors) and their responses to products and services. This information is used to improve market success.

NOC Number(s): 4163
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: **D I S**

Duties

Working as part of a team of marketing professionals, market research analysts:

- research the market potential of a product or service
- identify factors that may enhance product or service acceptance
- determine the nature and size of market segments
- help companies determine their position in the marketplace
- help develop and evaluate marketing and communications programs
- measure customer and employee satisfaction
- track market trends.

Depending on the nature of the employing organization, this may involve activities such as:

- keeping track of industry statistics and monitoring trends in trade literature
- collecting and analyzing information about competitors and market shares
- conducting or commissioning primary research (e.g. telephone surveys, focus groups) or surveys of secondary (published) sources, or purchasing syndicated or proprietary research from outside suppliers
- analyzing and presenting research findings
- modelling and analyzing customer response information contained in customer transaction databases
- forecasting the size of future markets.

Working Conditions

Market research analysts work primarily in offices and libraries. They may be required to work long hours to meet project deadlines or adjust their schedules to meet with people who are not available during regular business hours. Some travel may be required to meet with clients or supervise surveys.

Personal Characteristics

Market research analysts need the following characteristics:

- an interest in analyzing and interpreting statistical data
- an interest in meeting many different types of people
- excellent listening, communication and presentation skills.

They should enjoy co-ordinating information, planning and administering projects, developing policies and programs and consulting with others.

Educational Requirements

In Alberta, no specific academic qualifications are required to enter the field of market research. However, computer skills and a degree or diploma in marketing are definite assets. Advancement prospects are best for those who have one or more degrees that include courses in marketing, statistics and social research methods.

In Alberta, many post-secondary institutions offer programs in business administration, management and commerce. The following institutions offer degree or diploma programs with a specialization, concentration or major in marketing:

- **Grande Prairie Regional College** offers a two year Business Administration diploma program with a specialization in marketing. The entrance requirement is a high school diploma with English Language Arts 30-1 or 30-2 and Applied or Pure Math 30, or equivalent.
- **Lethbridge Community College** offers a two year Business Administration diploma program with a major in marketing. The entrance requirement is a high school diploma with English Language Arts 30-1 or 30-2 and Applied or Pure Math 30, or equivalent.
- **Medicine Hat College** offers a two year Marketing diploma program. The entrance requirement is a high school diploma with Grade 12 English and math, or equivalent.
- **Mount Royal College** in Calgary offers a two year diploma program in Business Administration with a specialization in marketing management. The entrance requirement is a high school diploma with at least 60 per cent in English Language Arts 30-1 and Applied or Pure Math 30, or equivalent.
- The **Northern Alberta Institute of Technology (NAIT)** in Edmonton offers two year diploma programs in Business Administration and Bilingual Business Administration with specializations in marketing. The entrance requirement for the Business Administration program is a high school diploma or equivalent with a competitive average in English Language Arts 30-1 or 30-2 (or English 30 or 33) and Applied or Pure Math 30 (or Math 30 or 33). Completion of an introductory computer or keyboarding course is strongly recommended. The entrance requirement for the Bilingual program is a high school diploma with ELA 30-1 or 30-2, a 30-level French course and Math 20, 30 or 33.
- **Red Deer College** offers a two year Business Administration program with a specialization in marketing. The entrance requirement is a high school diploma with an average of at least 60 per cent in English Language Arts 30-1 and Pure Math 30 (or 65 per cent in ELA 30-2 and Applied Math 30), or equivalent.
- The **Southern Alberta Institute of Technology (SAIT)** in Calgary offers a two year Business Administration diploma program with a specialization in marketing. The entrance requirement is a high school diploma or equivalent with English Language Arts 30-1 or 30-2 (or English 30 or 33) and Pure or Applied Math 30 (or Math 30, 31, or 33), or equivalent. SAIT also offers a two year Business Administration Automotive Marketing program.
- The **University of Alberta** in Edmonton offers a four year Bachelor of Commerce (B.Com.) degree program and a five year B.Com. co-operative education degree program with a major in marketing. The entrance requirements are a competitive average in English Language Arts 30-1, Pure Math 30, a 30-level science and two other approved Grade 12 subjects, or equivalent, and completion of one pre-professional year.
- The **University of Calgary** offers a four year Bachelor of Commerce (B.Comm.) degree program and a five year B.Comm. co-operative education degree program with a specialization in marketing. The entrance requirement is a high school diploma or equivalent with an average of at least 70 per cent in English Language Arts 30-1 (or English 30), Pure Math 30 (or Math 30)and three of the following: Math 31, Social Studies 30, Biology 30, Chemistry 30, Physics 30, Science 30, a 30 level language other than English, one five credit subject.
- The **University of Lethbridge** offers a four year Bachelor of Management degree program, five year combined degree programs and post-diploma programs with specializations in marketing. The entrance requirement for bachelor's degree programs is an average of at least 65 per cent in English Language Arts 30-1 (or English 30), Pure Math 30 (or equivalent), two other appropriate 30 level subjects and a fifth Grade 12 subject.

Post-secondary institutions throughout the province offer university transfer programs that allow students to apply up to two years of study toward university bachelor's degree programs. It is the student's responsibility to ensure that the courses they choose to take will be accepted for credit at the institution to which they wish to transfer.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Before enrolling in an education program, prospective marketing research analysts should discuss their education options with people currently working in the field.

Employment and Advancement

(section revised JANUARY 2006)

Market research analysts are employed by:

- manufacturing, processing and other large corporations
- market research suppliers
- management consulting firms

- advertising agencies
- business associations
- government departments.

Advancement opportunities vary depending on the analyst's qualifications, skills and work ethic, and the size and nature of the organization. Those who are the most effective at selling their ideas are the mostly likely to advance.

Market research analysts are part of the larger National Occupational Classification 4163: Business Development Officers and Marketing Researchers and Consultants. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Professional and Technical Services**
- **Oil and Gas Extraction**
- **Public Administration**
- **Finance, Insurance and Real Estate**
- **Information, Culture and Recreation**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

About 2,800 Albertans are employed in the Business Development Officers and Marketing Researchers and Consultants occupational group which is expected to grow 2.1 to 3.1 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 50 to 90 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since market research analysts form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for market research analysts.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Salaries for market research analysts vary considerably.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Business Development Officers and Marketing Researchers and Consultants occupational group working part-time or full-time earned from **$18,800 to $126,800 a year.** The average salary was **$64,200 a year.**

Salaries for market research analysts tend to be toward the lower end of this range.

Other Sources of Information

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Society for Marketing Professional Services (ASMPS) website: www.asmps.com

Related Occupational Profiles

Advertising Account Executive
Home Economist
Human Ecologist
Management Consultant
Marketing Manager

Related High School Subjects

Communication Technology; Enterprise and Innovation; Financial Management; Information Processing; Language Arts; Management and Marketing; Mathematics; and Social Studies

Related Post-Secondary Fields of Study

Business, Management and Administrative Studies; and Mathematics

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

The information contained in this profile was current as of the dates shown. **Salaries, employment outlook** and **educational programs** may change. Please check the information before making any career decisions.

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Marketing Manager

Produced OCTOBER 2005

Marketing managers plan, organize, co-ordinate and control the activities of organizations or departments within organizations involved in marketing products or services.

NOC Number(s): 0611.2
Minimum Education: 2 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: D S I

Duties

Marketing managers' duties vary depending on the size of the organization, the nature of its business and how centralized its operations are. In general, marketing managers may be responsible for:

- the profitability of products, lines or services
- sales, sales forecasting and strategic planning
- advertising and promotion
- market research and consumer needs assessment
- branding activities (ensuring that corporate and product images are consistent with reality)
- product development and scheduling
- pricing and distribution
- budget planning
- purchasing
- the allocation of resources
- customer service.

In large organizations, marketing managers direct and oversee the work of other managers in the marketing department (e.g. the managers of sales, advertising and marketing research units). In small organizations, marketing managers are responsible for all marketing activities.

Working Conditions

Marketing managers work in an office environment but often work more than the standard 40 hours a week. Extensive travel, including international travel, may be required.

Personal Characteristics

Marketing managers need the following characteristics:

- a creative, outgoing and energetic personality
- the motivation and flexibility required to succeed in a competitive environment
- the ability to deal effectively with stress
- strong project management and motivational abilities
- the ability to analyze qualitative and numerical information
- problem solving and decision making skills
- the ability to communicate persuasively in person and in writing.

They should enjoy co-ordinating information and directing the work of others, negotiating business contracts and developing innovative approaches to problems.

Educational Requirements

Most large organizations prefer to hire marketing managers who have business-related post-secondary education (e.g. a bachelor's or master's degree with a specialization in marketing, or a diploma in marketing) plus several years of related experience (e.g. sales or customer service experience). Some organizations require their marketing managers to have post-secondary education related to the type of product or service they offer (e.g. a degree or diploma in chemistry or engineering).

In Alberta, many post-secondary institutions offer programs in business administration, management and commerce. The following institutions offer degree or diploma programs with a specialization, concentration or major in marketing:

- **Grande Prairie Regional College** offers a two year Business Administration diploma program with a specialization in marketing. The entrance requirement is a high school diploma with English Language Arts 30-1 or 30-2 and Applied or Pure Math 30, or equivalent.
- **Lethbridge Community College** offers a two year Business Administration diploma program with a major in marketing. The entrance requirement is a high school diploma with English Language Arts 30-1 or 30-2 and Applied or Pure Math 30, or equivalent.
- **Medicine Hat College** offers a two year Marketing diploma program. The entrance requirement is a high school diploma with Grade 12 English and math, or equivalent.
- **Mount Royal College** in Calgary offers a two year diploma program in Business Administration with a specialization in marketing management. The entrance requirement is a high school diploma with at least 60 per cent in English Language Arts 30-1 and Applied or Pure Math 30, or equivalent.
- The **Northern Alberta Institute of Technology (NAIT)** in Edmonton offers two year diploma programs in Business Administration and Bilingual Business Administration with specializations in marketing. The entrance requirement for the Business Administration program is a high school diploma or equivalent with a competitive average in English Language Arts 30-1 or 30-2 and Applied or Pure Math 30, or equivalent. Completion of an introductory computer or keyboarding course is strongly recommended. The entrance requirement for the Bilingual program is a high school diploma with ELA 30-1 or 30-2, a 30-level French course and Math 20, 30 or 33, or equivalent.
- **Red Deer College** offers a two year Business Administration program with a specialization in marketing. The entrance requirement is a high school diploma with an average of at least 60 per cent in English Language Arts 30-1 and Pure Math 30 (or 65 per cent in ELA 30-2 and Applied Math 30), or equivalent.
- The **Southern Alberta Institute of Technology (SAIT)** in Calgary offers a two year Business Administration diploma program with a specialization in marketing. The entrance requirement is a high school diploma or equivalent with English Language Arts 30-1 or 30-2 (or equivalent) and Pure or Applied Math 30 (or Math 30, 31, or 33). SAIT also offers a two year Business Administration Automotive Marketing diploma program.
- The **University of Alberta** in Edmonton offers a four year Bachelor of Commerce (B.Com.) degree program and a five year B.Com. co-operative education degree program with a major in marketing. The entrance requirements are a competitive average in English Language Arts 30-1, Pure Math 30, a 30-level science and two other approved Grade 12 subjects, or equivalent, and completion of a pre-professional year.
- The **University of Calgary** offers a four year Bachelor of Commerce (B.Comm.) degree program and a five year B.Comm. co-operative education degree program with a specialization in marketing. The entrance requirement is a high school diploma or equivalent with an average of at least 70 per cent in English Language Arts 30-1 (or English 30), Pure Math 30 (or Math 30)and three of the following: Math 31, Social Studies 30, Biology 30, Chemistry 30, Physics 30, Science 30, a 30 level language other than English, one five credit subject.
- The **University of Lethbridge** offers a four year Bachelor of Management degree program, five year combined degree programs and post-diploma programs with specializations in marketing. The entrance requirement for bachelor's degree programs is an average of at least 65 per cent in English Language Arts 30-1 (or English 30), Pure Math 30 (or equivalent), two other appropriate 30 level subjects and a fifth Grade 12 subject.

Post-secondary institutions throughout the province offer university transfer programs that allow students to apply up to two years of study toward university bachelor's degree programs. It is the student's responsibility to ensure that the courses they choose to take will be accepted for credit at the institution to which they wish to transfer.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Before enrolling in an education program, prospective marketing managers should discuss their education options with people currently working in the field.

Employment and Advancement

(section revised JANUARY 2006)

Marketing managers are employed by private and public organizations such as:

- manufacturers
- retailers
- wholesalers
- service sector businesses
- not-for-profit agencies
- market research organizations
- advertising agencies.

Advancement opportunities vary depending on the size and nature of the organization and the manager's qualifications. Those who have post-secondary education in marketing may advance to senior management positions in large organizations.

Marketing managers are part of the larger National Occupational Classification 0611: Sales, Marketing and Advertising Managers. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Wholesale Trade**
- **Information, Culture and Recreation**
- **Professional and Technical Services**
- **Other Manufacturing**
- **Oil and Gas Extraction**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 12,800 Albertans are employed in the Sales, Marketing and Advertising Managers occupational group which is expected to grow 1.0 to 2.0 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 120 to 260 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since marketing managers form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for marketing managers.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Salaries in this occupation vary according to the size and nature of the organization and the scope of the manager's responsibilities.

According to the **2005 Alberta Wage and Salary Survey**, part-time or full-time starting salaries for Albertans working in the Sales, Marketing and Advertising Managers occupational group ranged from **$17,900 to $134,000 a year.** After three years, salaries ranged from **$19,400 to $139,600 a year.** The average salary was **$84,500 a year**.

Other Sources of Information

EDinfo website: www.alis.gov.ab.ca/edinfo

Related Occupational Profiles

Advertising Account Executive
Fundraiser
Management Consultant
Market Research Analyst
Public Relations Representative
Retail Store Manager
Webmaster

Related High School Subjects

Communication Technology; Enterprise and Innovation; Financial Management; Language Arts; Management and Marketing; Mathematics; and Social Studies

Related Post-Secondary Fields of Study

Business, Management and Administrative Studies

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Massage Therapist

Produced NOVEMBER 2004

Massage therapists assess the soft tissue and joints of the body and administer massage treatments to relieve pain and symptoms of stress, or to develop, maintain, rehabilitate or augment physical function.

NOC Number(s): 3235.4
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **M S O**

Duties

Massage therapists may be trained in a variety of different massage techniques but, in general, they:

- conduct client assessments to determine treatments required
- administer appropriate massage treatments including soft tissue manipulation, relaxation techniques, stretching techniques, finger/hand pressure to specific points on the body, hydrotherapy, manual stripping or cross-fibre friction of muscle tissue, trigger point therapy and drainage techniques
- consult with other health care professionals such as physiotherapists, chiropractors, physicians and psychologists to develop treatment plans for clients
- maintain treatment records.

Massage therapists also may provide guidance and information about techniques for postural improvement and stretching, strengthening, relaxation and rehabilitative exercises.

Working Conditions

Most massage therapists work indoors in quiet, clean environments. They usually work with one client at a time using a table or chair, oils, powders, towels and sheets. Those who travel to client offices and homes must lift equipment weighing up to 10 kilograms.

This work is strenuous and requires standing for long periods of time. Hours of work depend on the work setting and the amount of work therapists are capable of doing. Self-employed therapists may work evenings and weekends, or work part-time hours in several different locations.

Personal Characteristics

Massage therapists need the following characteristics:

- good communication skills including excellent listening skills
- good health
- good posture
- a sensitive touch
- an interest in wellness issues
- a friendly, outgoing personality and a caring attitude
- the ability to work in a standing position for long periods of time
- the ability to concentrate while administering massage treatments.

Massage therapists should enjoy developing treatment plans according to established guidelines and methods, helping people, and using equipment such as whirlpool baths and infra-red lamps.

Educational Requirements

(section revised FEBRUARY 2006)

Massage therapist is not a regulated occupation in Alberta. The following education/training is recommended:

- cardiopulmonary resuscitation (CPR) and first aid
- anatomy, physiology and pathology
- massage techniques
- movement patterns
- the principles of assessment
- body responses to stress or illness, and therapy
- how to use body mechanics to prevent fatigue and work-related injuries
- ethics and psychology as they relate to their work
- how to prevent infection.

Self-employed massage therapists also need excellent business skills in areas such as accounting, marketing and record-keeping.

Before choosing a training route, prospective massage therapists are advised to talk to several people who are already employed this field.

In Alberta, training programs for massage therapists are offered by the following public institutions:

- **Grant MacEwan College** in Edmonton offers a two year Massage Therapy diploma program. The entrance requirement is a high school diploma or equivalent with one of the following: Biology 30, Chemistry 30 or Science 30.
- **Lethbridge Community College** offers a 12 month Massage Therapy certificate program on a full-time or part-time basis. The entrance requirements are a high school diploma with at least 60 per cent in English 30 or 33 and Biology 30; working knowledge of word processing, spreadsheets and database software; evidence of recent medical examination and immunization records.
- **Medicine Hat College** offers one year certificate and two year diploma programs in Massage Therapy. The entrance requirement is a high school diploma or equivalent, including at least 60 per cent in English 30 or 33, Biology 30 and two other 30-level subjects (one of which must be a science) or equivalent. Medicine Hat College also offers a two semester, post diploma Sports Massage Certificate program.
- **Mount Royal College** in Calgary offers a full-time 12 month Massage Therapy certificate program and a part-time Massage Therapy certificate program (courses offered evenings and weekends). The entrance requirement is a high school diploma with Biology 30 or equivalent.

A number of private vocational schools in Alberta offer training programs, often in particular massage techniques:

- The **Alberta Institute of Massage** in Red Deer offers a 25- and a 64-week Massage Therapy Certificate program and a 36- and a 78-week Advanced Massage Therapy Diploma program.
- The **Canadian College of Massage and Hydrotherapy** in Calgary offers a 69-week Massage Therapy program.
- The **CDI College of Business, Technology and Health Care** in Calgary and Edmonton offers an 88-week Massage Therapy program.
- The **Calgary College of Holistic Health and Clinics Inc.** offers a seven week, full-time Swedish Relaxation Massage program days and a 15-week part-time program.
- **Edmonton College of Swedish Relaxation Massage Inc.** in Sherwood Park offers a 26-week Massage Therapy program.
- The **Foothills College of Massage Therapy Inc.** in Calgary offers a 26-week Massage Therapy program and a 28 week Advanced Massage Therapy program.
- The **International Academy of Esthetics** in Sherwood Park offers a 350- hour Massage Practitioner program.
- The **MH Vicars School of Massage Therapy** in Edmonton offers a 88-week Remedial Massage Therapy program.
- **MaKami College Inc.** in Edmonton offers a 25-week, full-time Massage Therapy program and a 52 week, part-time program.
- **McMurray Training Institute** in Fort McMurray offers a 30-week, part-time Swedish Relaxation Massage program and a 27-week, part-time Massage Therapy program.
- The **Northern Institute of Massage Therapy Inc.** in Red Deer offers 40-week Advanced Therapeutic Massage program and a 28-week Basic Relaxation Massage program.
- The **Northwestern School of Massage** in Calgary offers a Relaxation/Swedish Massage program by distance education and a 12-week program.

- **Prairie Training Institute** in Grande Prairie offers a 30-week, part-time Swedish Relaxation Massage program and a 27-week, part-time Massage Therapy program.
- The **Professional Institute of Massage and Fitness** in Calgary offers 37-week Massage Therapy program.
- The **Somatics Institute Ltd. School of Massage** in Edmonton offers an 80-week Massage Therapy program.
- The **Southern Alberta Institute of Massage** in Edmonton offers a 24-week Massage Therapy program.
- The **St. Albert Training Institute** offers a 30-week, part-time Swedish Relaxation Massage program and a 27-week, part-time Massage Therapy program.

Admission requirements vary but generally include a high school diploma or equivalent. Some programs require Biology 30. For current information about programs and mature student admission policies, please check post-secondary calendars or websites.

Massage therapists usually attend ongoing professional development workshops to keep their skills up to date. Continuing education programs may be offered on an as needed basis.

Other Requirements

Massage therapist is not a regulated health profession in Alberta.

Some municipalities require massage therapists to be licensed under local by-laws.

Employment and Advancement

(section revised JANUARY 2005)

Most massage therapists are self-employed. They may travel to clients' offices or homes, or work in:

- their own homes or offices
- gyms
- health clubs or spas
- massage centres
- clinics shared with chiropractors, physicians, physical therapists, psychotherapists, psychologists, naturopaths or dentists
- resorts.

Those who work in clubs, centres or clinics are generally responsible for building and maintaining their own clientele and operating as a small business. Advancement in this occupation generally takes the form of building a larger client base.

Massage therapists are part of the larger National Occupational Classification 3235: Other Technical Occupations in Therapy and Assessment. In Alberta, most people employed in this classification work in the **Health Care and Social Assistance** industry.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Income ranges in this occupation depend on the type of employment, location and number of clients. Massage therapists may charge from **$20 to $45** for a **half hour** treatment and **$40 to $75** for a **one hour** treatment. Some massage therapists bill 20 to 30 client hours a week. Massage therapists who contract their services to clinics receive a percentage of billings.

According to the **2005 Alberta Wage and Salary Survey**, part-time or full-time starting salaries for Albertans working in the Massage Therapists group earned from **$11,300 to $80,900 a year.** The average salary was **$34,000 a year**.

Other Sources of Information

(section revised OCTOBER 2005)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Registered Massage Therapists Society (ARMTS) website: www.armts.com

Association of Massage Therapists and Wholistic Practitioners (AMTWP) website: www.amtwp.org

Canadian Massage Therapist Alliance (CMTA) website: www.cmta.ca

Massage Therapists Association of Alberta (MTAA) website: www.mtaalberta.com

Related Occupational Profiles

Acupuncturist
Athletic Therapist
Herbalist
Homeopath
Kinesiologist
Midwife
Naturopathic Doctor
Physiotherapist
Reflexologist

Related High School Subjects

Community Health; Financial Management; Language Arts; Management and Marketing; Mathematics; Physical Education; and Science (Biology; and Chemistry)

Related Post-Secondary Fields of Study

Health Care and Medical Sciences

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Materials Engineering Technologist

Produced JULY 2004

Materials engineering technologists work in engineering teams that select and test materials for particular industrial and engineering uses and investigate materials-related problems.

NOC Number(s): 2233.1
Minimum Education: 2 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **I M d**

Duties

In general, materials engineering technologists test, analyze and inspect:

- metals (ferrous and non-ferrous)
- non-metallic materials (soils, concrete, asphalts, ceramics, plastics, composites)
- fabricating procedures (e.g. welding, forging, casting, machining).

They interpret and use codes, standards and specifications, and perform quality assurance tasks such as:

- mechanical testing (evaluating tensile, compressive, hardness, impact and fatigue characteristics of materials)
- metallurgical testing (using metallography microscopy, photography and image analysis) to assess the quality of materials
- nondestructive testing (using tests such as x-ray and gamma ray radiography, ultrasonic, eddy current, liquid penetrant, magnetic particle) to assess the internal integrity of products
- analyzing the causes of corrosion-related failures to find methods of minimizing the effects of corrosion
- determining the causes of equipment and machine failures.

Working Conditions

Materials engineering technologists use computers to analyze data collected during testing procedures and prepare technical reports. They work in offices, laboratories and outdoors. Lifting up to 25 kilograms is required.

Personal Characteristics

Materials engineering technologists need the following characteristics:

- an aptitude for mathematics and science (especially physics and chemistry)
- mechanical ability
- an interest in working with processes and equipment
- the ability to work independently when required
- good interpersonal skills for working effectively and co-operatively as part of a technical or engineering team.

They should enjoy doing precise work with tools, equipment and instruments, analyzing test results and finding innovative solutions to problems, and taking a methodical approach to their work.

Educational Requirements

The minimum educational requirement for materials engineering technologists is a **two year diploma in a related technology**.

In Alberta, the **Northern Alberta Institute of Technology (NAIT)** in Edmonton offers a two year Materials Engineering Technology diploma program. The admission requirement is a high school diploma or equivalent with English 30 or 33, Math 30 (or equivalent, or 60 per cent in Math 33), and one of: Science 30, Physics 30 or Chemistry 30. An interest in and aptitude for applied sciences, especially those with a physics and chemistry base, is a definite asset to anyone considering this program.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Other Requirements

(section revised OCTOBER 2004)

Certification with the Alberta Society of Engineering Technologists (ASET) is voluntary.

Under Alberta's Engineering, Geological and Geophysical Professions Act, Registered Professional Technologists - Engineering must be ASET members to engage in a defined scope of engineering practice as registered by the Association of Professional Engineers, Geologists and Geophysicists of Alberta (APEGGA).

Employment and Advancement

(section revised JANUARY 2006)

Materials engineering technologists are employed by:

- manufacturing companies producing materials such as metals, plastics, concrete or composites
- equipment manufacturing companies producing pressure vessels, pipeline, oil field equipment, mining equipment, and machinery and electronics components
- engineering and testing companies providing services such as nondestructive inspection, corrosion testing and control, failure investigations and materials testing to the processing and manufacturing industries
- government and university materials testing laboratories
- the technical sales departments of service and manufacturing companies
- quality assurance groups within chemical, petrochemical processing and manufacturing industries.

Experienced technologists may advance to supervisory and managerial positions.

Materials engineering technologists are part of the larger National Occupational Classification 2233: Industrial Engineering and Manufacturing Technologists and Technicians. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Professional and Technical Services**
- **Oil and Gas Extraction**
- **Metals, Metal Fabrication and Machinery Manufacturing**
- **Other Manufacturing**
- **Construction**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 1,450 Albertans are employed in the Industrial Engineering and Manufacturing Technologists and Technicians occupational group which is expected to grow 1.6 to 2.6 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 20 to 40 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since materials engineering technologists form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for materials engineering technologists.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Industrial Engineering and Manufacturing Technologists and Technicians occupational group working part-time or full-time earned from **$20,800 to $83,100 a year.** The average salary was **$68,200 a year.**

For more detailed information, see ASET's Annual Salary Surveys.

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Society of Engineering Technologists (ASET) website: www.aset.ab.ca

Related Occupational Profiles

Commercial Diver
Gas Utility Operator
Industrial Engineering Technologist
Materials/Metallurgical Engineer
Mechanical Engineering Technologist
Plastics Processing Technician

Related High School Subjects

Design Studies; Fabrication Studies; Language Arts; Mathematics; Physical Education; and Science (Chemistry; and Physics)

Related Post-Secondary Fields of Study

Engineering and Science Technologies

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Materials/Metallurgical Engineer

Produced JULY 2004

Materials engineers are involved in the development, processing, application and evaluation of metals and materials.

NOC Number(s): 2142
Minimum Education: 4 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **I O D**

Duties

In general, materials engineers:

- study the properties and characteristics of metallic and non-metallic materials (e.g. resistance to corrosion)
- develop, test and apply new materials that are tailored to meet specific requirements (e.g. alloys, composites, plastics, ceramics)
- use thermal and mechanical treatments to modify alloy properties
- research, develop and monitor processes for extracting metals from ores
- determine appropriate methods for fabricating and joining materials
- monitor material performance and evaluate material deterioration
- analyze material failures to find causes and develop solutions.

Materials engineers can be broadly grouped into three areas of practice:

- **Extractive metallurgical** engineers obtain pure metals through various extractive processes.
- **Physical materials** engineers study the nature, structure and physical properties of metals and their alloys, and their responses to applied forces.
- **Materials selection** engineers evaluate technical and economic factors as they relate to how metals, plastics, ceramics or other available materials perform in particular applications and the causes of material failures.

Working Conditions

Materials engineers may work in offices, plants, laboratories, field sites or a combination of these settings. In offices, they prepare proposals and budgets, manage projects, analyze data and write reports. In laboratories, they design and direct the testing or control of processing procedures. In plants, they co-ordinate processing and laboratory work or they examine the performance of materials in the process facility. In the field, they examine materials performance and joining methods. Senior engineers may spend more time in an office environment performing managerial functions.

Personal Characteristics

Materials engineers need the following characteristics:

- a natural sense of scientific curiosity
- the ability to analyze and solve problems
- the ability to work independently or in a team environment
- effective communication skills.

They should enjoy being innovative, doing work that requires precision and being an expert in their field.

Educational Requirements

The minimum education requirement to work as a materials engineer is a **bachelor's degree** in materials engineering, metallurgical engineering or materials science. Research positions generally require graduate (master's, doctoral) degrees.

In Alberta, the Department of Chemical and Materials Engineering at the **University of Alberta** in Edmonton offers a four year Bachelor of Science (B.Sc.) degree in materials engineering. The admission requirement is a high school diploma with at least 80 per cent in English 30, Math 30 or Pure Math 30, Math 31, Chemistry 30 and Physics 30.

The University of Alberta also offers a co-operative engineering program that consists of periods of academic study alternating with periods of planned work experience in industry. Students in the co-operative program usually take five years to complete degree requirements.

Post-secondary institutions throughout the province offer university transfer programs that allow students to apply up to two years of study toward university bachelor's degree programs. It is the student's responsibility to ensure that the courses they choose to take will be accepted for credit at the institution to which they wish to transfer.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Other Requirements

(section revised OCTOBER 2004)

Under Alberta's Engineering, Geological and Geophysical Professions Act, you must be a registered member of the Association of Professional Engineers, Geologists and Geophysicists of Alberta (APEGGA) to practice as a Professional Engineer. You do **not** have to be registered if you work under the direct supervision of a Professional Engineer and do not call yourself a Professional Engineer.

Employment and Advancement

(section revised JANUARY 2006)

The main employers of materials engineers are:

- inspection firms
- materials testing laboratories
- the automotive industry
- the microelectronic industry
- primary metal producers
- large fabricators of metals
- government and industrial research establishments
- industries that manufacture aircraft parts, machinery and electrical equipment
- engineering consulting firms specializing in corrosion, pipeline integrity and failure analysis.

In Alberta, materials engineers also are employed by:

- petroleum production and refining industries (e.g. oil sands companies)
- pipe production and installation industries
- coal and chemical industries
- mineral processing plants.

Materials engineers who have production experience may move into sales or trouble-shooting positions dealing with customer complaints. An increasing number of materials engineers work for consulting firms and in research and development, resolving problems ranging from the interaction of molten metal with brick furnace linings to the failure of thin-film circuit elements in microelectronic components. Experienced materials engineers may advance to management positions.

In Alberta, over 75 per cent of people employed as materials and metallurgical engineers work in the following industries:

- **Professional and Technical Services**
- **Oil and Gas Extraction**
- **Metals, Metal Fabrication and Machinery Manufacturing**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation**.

Over 350 Albertans are employed in the Metallurgical and Materials Engineers occupational group which is expected to grow 1.5 to 2.5 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised SEPTEMBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans working part-time or full-time in the Metallurgical and Materials Engineers occupational group earned **up to $153,900 a year**. Those with three years of experience earned from **$39,700 to $102,900 a year.** The average salary was **$73,300 a year**.

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Association of Professional Engineers, Geologists and Geophysicists of Alberta (APEGGA) website: www.apegga.org

Canadian Institute of Mining, Metallurgy and Petroleum (CIM) website: www.cim.org

Related Occupational Profiles

Materials Engineering Technologist
Mining Engineer
Petroleum Engineer

Related High School Subjects

Design Studies; Fabrication Studies; Language Arts; Mathematics; and Science (Chemistry; and Physics)

Related Post-Secondary Fields of Study

Engineering, Architecture and Related Studies

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Mathematician

Produced NOVEMBER 2005

Mathematicians use logical reasoning to study structure. They do fundamental research and develop techniques and insights that can be applied in a variety of fields, including physics, engineering, finance and organizational structure and decision making.

NOC Number(s): 2161.1
Minimum Education: 4 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **I M D**

Duties

Mathematicians research fundamental mathematics and its application to a wide variety of problems. At an abstract level, they assemble sets of assumptions and explore the consequences of each set. In science (for example, physics, chemistry, engineering), social science (for example, psychology, sociology, political science) and business (for example, finance, actuarial science, risk analysis) fields, they also may:

- apply established methods of numerical analysis, statistics and other known techniques
- develop new and more efficient methods of dealing with mathematical processes.

For example, mathematicians may develop mathematical models of the ocean floor, changing demographic characteristics or blood flow; or apply number theory to computer security problems or the analysis of seismological survey results.

When confronted with any problem that has some mathematical basis, an organization may consult a mathematician for advice about:

- what is required to assure the existence of a solution to the problem
- the accuracy with which a solution can be found and what it may cost.

Mathematicians may work in any of the following areas:

- **Applied mathematicians** use mathematical theories and techniques to solve practical problems in business, engineering and the sciences. For example, they may investigate the cost of establishing a new business or the mathematical aspects of drilling for oil.
- **Theoretical mathematicians** seek to advance mathematical science by developing new principles and new relationships between existing mathematical principles.
- **Mathematical consultants** assist with business and research projects that demand advanced knowledge of mathematics. They may work on mathematical problems in a variety of fields (for example, in mechanics, electromagnetic theory, economics, communication networks or the petrochemical industry).
- **Mathematics teachers and professors** instruct students in subjects such as arithmetic, algebra, geometry, pre-calculus, calculus, statistics and advanced mathematics.
- **Financial mathematicians** develop mathematical and probability models of stock markets, options and currency futures.
- **Statisticians and actuaries** use mathematics to solve problems in finance, business and government. For more information, see the Statistician and Actuary occupational profiles.

Mathematicians in industry frequently work on problems in areas such as operations research, statistical design or marketing. Mathematicians in government are usually specialists in statistics, economics, management science, physics or engineering.

Working Conditions

Although mathematicians usually work in an office environment with standard office hours, overtime is not uncommon. They may work alone or as part of a team.

Personal Characteristics

In addition to talent and an interest in mathematics, mathematicians need the following characteristics:

- the ability to think logically
- the ability to formulate scientific problems in mathematical terms
- the ability to apply individual and prolonged effort to a problem
- the ability to communicate ideas clearly
- creativity and imagination
- the ability to work independently with little supervision and in a team environment.

They should enjoy synthesizing data, applying mathematical techniques and advising others regarding mathematical applications and methods.

Educational Requirements

Ideally, prospective mathematicians should combine a general education with **an honours degree or specialization in mathematics, or mathematics and a related subject.** Mathematicians often have graduate degrees in mathematics (which require an acceptable average in a four year bachelor's degree program in mathematics for admission). Post-graduate work in pure or applied mathematics at the doctoral (PhD) level is usually required for mathematicians employed in a research environment.

Students interested in pursuing a career in mathematics should explore mathematics beyond the high school curriculum:

- read books about mathematics
- work on mathematical problems found on the **Canadian Mathematical Society** website and in contest papers, magazines and books
- participate in mathematics clubs, fairs and university outreach programs.

In Alberta, the following post-secondary institutions offer **four year** degree programs in mathematics:

- **Concordia University College of Alberta** in Edmonton offers a B.Sc. degree in Mathematics. The entrance requirement is an average of 60 per cent in English 30, Math 30 or Pure Math 30, two 30-level sciences (Physics 30, Chemistry 30 or Biology 30) and one other appropriate 30-level subject.
- The **University of Alberta** in Edmonton offers general and honours Bachelor of Arts (BA) degree programs and a Bachelor of Science (B.Sc.) degree program in Mathematics with honours or specializations in mathematics, applied mathematics, computational science, economics and mathematics, actuarial science, mathematics and finance, and mathematical physics. The entrance requirement for the BA degree program is an average of at least 65 per cent in English 30, Math 30 or Pure Math 30 and three other approved Grade 12 subjects. Admission to the BA honours degree program also requires Math 31. The entrance requirement for the B.Sc. degree program is an average of at least 75 per cent in English 30; Math 30 or Pure Math 30; Math 31; one of Physics 30, Chemistry 30 or Biology 30; and one other approved Grade 12 subject. Students may include an industrial internship in their program. Admission to the B.Sc. honours program requires an average of at least 80 per cent. The University of Alberta also offers master's and doctoral degree programs in mathematics and statistics. The University of Alberta in Camrose also offers bachelor degree programs in mathematics.
- The **University of Calgary** offers BA and B.Sc. degree programs in Mathematics with specializations in actuarial science, applied mathematics, general mathematics, pure mathematics, and statistics. The entrance requirement is a high school diploma or equivalent with an average of at least 70 per cent in English 30, Math 30 or Pure Math 30 and three other appropriate Grade 12 subjects (Math 31 recommended). Students wishing to enter the applied mathematics specialization should have Physics 30. The University of Calgary also offers master's and doctoral degree programs in mathematics.
- The **University of Lethbridge** offers B.Sc., Bachelor of Arts and Science (B.A.Sc.), and Bachelor of Management (B.Mgt.) degree programs in Mathematics. The entrance requirement is an average of at least 65 per cent in English 30, Math 30 or Pure Math 30 and two other 30 level subjects (Math 31 recommended) plus a fifth Grade 12 subject. The University of Lethbridge also offers five year combined bachelor's degree programs and master's degree programs in mathematics.

For information about Bachelor of Education degree programs, see the Secondary School Teacher occupational profile.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

(section revised JANUARY 2006)

Mathematicians are employed by:

- financial institutions
- governments
- insurance companies
- pension-benefit consulting firms
- science and engineering consulting firms
- scientific institutions and research agencies
- schools, colleges and universities.

The computer industry also employs many people who have mathematical training. These positions are generally located in the head offices of large organizations.

In large institutions, mathematicians who have strong communication and people skills may advance to management positions.

Mathematicians are part of the larger National Occupational Classification 2161: Mathematicians, Statisticians and Actuaries. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Professional and Technical Services**
- **Public Administration**
- **Finance, Insurance and Real Estate**
- **Educational Services**
- **Food and Beverage Products Manufacturing**
- **Retail Trade**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 450 Albertans are employed in the Mathematicians, Statisticians and Actuaries occupational group which is expected to grow 1.5 to 2.5 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover. (**Note**: Since mathematicians form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for mathematicians.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Mathematicians are employed in such diverse fields and positions that it is difficult to identify a typical salary range.

In 2003, Albertans in the Mathematicians, Statisticians and Actuaries occupational group earned earned an average salary of **$58,800 a year** (2003 Alberta Wage and Salary Survey).

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Canadian Applied and Industrial Mathematics Society (CAIMS) website: www.caims.ca

Canadian Mathematical Society (CMS) website: camel.math.ca

Mathematics of Information Technology and Complex Systems (MITACS) website: www.mitacs.math.ca

Mathematics with a Human Face website: www.careers.math.ca

Related Occupational Profiles

Actuary
Astronomer
Demographer
Economist
Operations Research Analyst
Statistician

Related High School Subjects

Information Processing; Language Arts; Mathematics; and Science (Physics)

Related Post-Secondary Fields of Study

Computer and Information Technology; Mathematics; Sciences; and Social Sciences, Law and Religious Studies

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For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Meat Cutter

Produced MAY 2003

Meat cutters prepare standard cuts of meat, poultry and fish, and products such as sausage in processing plants or retail food establishments.

NOC Number(s): 6251
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **M O d**

Duties

Meat cutters in retail establishments prepare meat cuts and products so they appear attractive and catch the shopper's eye. Duties vary from one job to another but, in general, retail meat cutters:

- receive, store and rotate meat products
- maintain storage, preparation and sales areas in accordance with an approved sanitation program
- ensure meat quality
- package, price and display meat items
- prepare and market "ready to cook" and partially/fully prepared meat items
- display meat products properly.

Retail meat cutters may also:

- serve customers
- negotiate with representatives from supply companies
- cut orders to meet special needs
- keep records of meat sales
- maintain inventories.

Meat cutters in meat processing plants use knives and specialized equipment to slaughter, break, cut, bone and trim meats into a variety of cuts for domestic and international markets. They may work in a particular department performing a specific task (e.g. boning out hams), or work on a variety of tasks throughout the day. Those who work in the hotel, restaurant and institution departments of the plant prepare individual-size portions by breaking down larger portions of meat and trimming them to pre-determined specifications.

Working Conditions

Meat cutters work indoors, generally in temperature-controlled conditions ranging from minus two to four degrees Celsius. They are on their feet most of their work day and routinely lift items weighing up to 25 kilograms. The risk of injury from repetitive motions and working with sharp instruments such as knives and saws is reduced by following appropriate safety precautions.

Most meat cutters work shifts totaling 40 hours a week.

Personal Characteristics

Meat cutters need the following characteristics:

- good health (a physical examination may be required for employment)
- the strength and stamina required to stand for long periods and lift/move heavy pieces of meat
- good eye-hand co-ordination, depth perception and colour vision
- the ability to follow instructions
- the ability to work independently and in a team environment
- the ability to communicate courteously and effectively with co-workers and supervisors and, in the case of retail meat cutters, the general public.

Meat cutters should enjoy having clear rules and organized methods for their work, using tools and equipment to perform tasks requiring precision, and taking responsibility for projects.

Educational Requirements

There are **no formal education requirements** for meat cutters. Many have learned on the job. However, most employers prefer to hire job applicants who are high school graduates or have related post-secondary education. On-the-job training takes one to two years depending on the trainee's related previous experience and education.

In Alberta, the following institutions offer related training:

- **Northern Alberta Institute of Technology (NAIT)** in Edmonton offers a five month Retail Meat Cutting certificate program. The entrance requirement is Grade 10 or equivalent, including English and math.
- **Olds College** offers a five-month Meat Processing certificate program that includes three weeks of work experience. Applicants must be at least 18 years of age and in good physical condition. A high school diploma or equivalent is recommended.
- **Southern Alberta Institute of Technology (SAIT)** in Calgary offers a 24-week Retail Meat Cutting certificate program that has a work experience component. The entrance requirement is a minimum of 35 high school credits (Grade 10) including English 10 or 13 or Humanities 10, and Pure or Applied Math 10 or Math 13.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

However they acquire their training, meat cutters must know and practice good personal hygiene, and follow sanitation and safety procedures. Retail meat cutters must be familiar with advanced merchandising techniques.

Employment and Advancement

(section revised JANUARY 2006)

Meat cutters are employed by meat processing establishments or retail businesses such as supermarkets, specialty sausage and delicatessen stores, and independent meat markets.

Retail trainees usually start with routine work such as removing bones and gradually learn more complex skills such as rolling and tying roasts, and curing meat. Processing plant meat cutters usually start on an assembly line.

Experienced meat cutters may advance to supervisory positions such as meat department manager in a supermarket or team co-ordinator in a meat processing plant. Some meat cutters open their own meat markets or move into related positions in sales, inspection or quality assurance.

Meat cutters are part of the larger National Occupational Classification 6251: Butchers and Meat Cutters - Retail and Wholesale. In Alberta, most people employed in this classification work in the **Retail Trade** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Retail Trade industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 3,250 Albertans are employed in the Butchers and Meat Cutters - Retail and Wholesale occupational group which is expected to grow 1.5 to 2.5 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 40 to 90 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since meat cutters form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for meat cutters.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Butchers and Meat Cutters - Retail and Wholesale occupational group working part-time or full-time earned from **$13,300 to $49,400 a year.** The average salary was **$28,500 a year.**

Other Sources of Information

(section revised JANUARY 2004)

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Related Occupational Profiles

Agricultural Products Processing Machine Operator
Cook

Related High School Subjects

Agriculture; Foods; Language Arts; Mathematics; and Physical Education

Related Post-Secondary Fields of Study

Personal and Food Services

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Mechanical Engineer

Produced SEPTEMBER 2004

Mechanical engineers research, design and evaluate machines, devices, equipment, systems and processes, and plan and oversee their development, installation, operation and maintenance.

NOC Number(s): 2132
Minimum Education: 4 years post-secondary education/training
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: **I O D**

Duties

Mechanical engineers work on a wide variety of mechanical systems including:

- industrial systems and processing (e.g. in refineries, petrochemical facilities, mines)
- manufacturing systems, plants and products
- environmental control systems (heating, ventilating and air conditioning)
- transportation equipment (land, sea, air, space)
- utility systems and infrastructure delivering water, gas, oil and power
- emerging fields such as robotics, biomedical engineering, commercial space travel, lasers, nanotechnology, telecommunications and computer components and systems.

There are many different specializations in mechanical engineering. The following illustrate some of the possibilities.

Design engineers create the plans for new products, machines, industrial equipment, instruments, processes and systems and provide technical support for changes to existing ones.

Development engineers analyze proposed products or processes, test them out and attempt to improve them.

Manufacturing engineers plan, develop and research the tools, processes, machines and equipment needed to produce quality products economically (for more information, see the Manufacturing Engineer occupational profile).

Sales engineers are involved in technical sales and service.

Research engineers investigate and develop new materials, processes, engineering tools and phenomena that may enable the creation of new products, systems and applications.

Working Conditions

Mechanical engineers may work in office, laboratory, shop or field environments. Field work is required to review site conditions and inspect the construction of designs. Mechanical engineers also may work in research and development laboratories, or the production departments of factories where they supervise the testing and manufacture of products.

Personal Characteristics

Mechanical engineers need the following characteristics:

- the ability to think in mathematical and abstract terms
- the ability to visualize three-dimensional objects from two-dimensional drawings
- a practical, mechanical inclination
- an interest in technical processes
- persistence and determination
- well-developed oral and written communication skills
- good interpersonal skills and the ability to work as part of a team.

They should enjoy being innovative, doing work that requires precision, making decisions and supervising others.

Educational Requirements

The minimum education requirement for mechanical engineers is a **bachelor's degree in mechanical engineering**.

In Alberta, the Faculties of Engineering at the **University of Alberta** in Edmonton and the **University of Calgary** offer four year bachelor degree programs in mechanical engineering. Both institutions also offer a co-operative education or internship program consisting of periods of academic study alternating with periods of planned work experience in industry. Co-operative/internship engineering degree programs usually require five years to complete.

The admission requirement for engineering programs at both the University of Alberta and the University of Calgary is a high school diploma with an overall average of 78 or 80 per cent in the following subjects:

- English 30
- Chemistry 30
- Pure Math 30
- Math 31
- Physics 30.

Post-secondary institutions throughout the province offer university transfer programs that allow students to apply up to two years of study toward university bachelor's degree programs. It is the student's responsibility to ensure that the courses they choose to take will be accepted for credit at the institution to which they wish to transfer.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Mechanical engineers must be prepared to adapt to dramatic changes in skill requirements throughout their careers.

Other Requirements

(section revised OCTOBER 2004)

Under Alberta's Engineering, Geological and Geophysical Professions Act, you must be a registered member of the Association of Professional Engineers, Geologists and Geophysicists of Alberta (APEGGA) to practice as a Professional Engineer. You do **not** have to be registered if you work under the direct supervision of a Professional Engineer and do not call yourself a Professional Engineer.

Employment and Advancement

(section revised JANUARY 2006)

Mechanical engineers are employed in various industries including:

- natural resources (forestry, agriculture, oil and gas, mining)
- energy conversion (thermal and hydro-electric power stations, solar, wind and bio-fuels)
- processing (petrochemical/refining, food and beverage production)
- manufacturing (vehicles, appliances, furnishings, telecommunication equipment)
- construction (mechanical systems such as elevators or air conditioning, heating and ventilation systems)
- transportation (road, rail, air, marine, space vehicles and systems)
- utility systems (water, natural gas, electricity).

Experienced engineers may advance to administrative or management positions. Those who have graduate degrees may teach at the post-secondary level or conduct research.

In Alberta, over 75 per cent of people employed as mechanical engineers work in the following industries:

- **Professional and Technical Services**
- **Oil and Gas Extraction**
- **Utilities**
- **Metals, Metal Fabrication and Machinery Manufacturing**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

About 3,950 Albertans are employed in the Mechanical Engineers occupational group which is expected to grow 2.5 to 3.5 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 90 to 140 **new** positions will be created each year **in addition** to job openings created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised SEPTEMBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Mechanical Engineers occupational group working part-time or full-time earned from **$26,500 to $148,300 a year.** The average salary was **$78,600 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Association of Professional Engineers, Geologists and Geophysicists of Alberta (APEGGA) website: www.apegga.org

Society of Mechanical Engineers website: www.sme.org

Related Occupational Profiles

Aerospace Engineer
Agricultural Engineer
Forensic Laboratory Analyst
Mechanical Engineering Technologist
Technical Sales Representative

Related High School Subjects

Design Studies; Language Arts; Mathematics; and Science (Chemistry; and Physics)

Related Post-Secondary Fields of Study

Engineering, Architecture and Related Studies

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Mechanical Engineering Technologist

Produced JULY 2004

Mechanical engineering technologists may work independently or with mechanical engineers in designing, drawing, developing and modifying various types of products, machines, mechanical systems and manufacturing processes.

NOC Number(s): 2232.1
Minimum Education: 2 years post-secondary education/training
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: **O I M**

Duties

Mechanical engineering technologists may be primarily involved in:

- mechanical design and construction
- manufacturing
- plant engineering
- safety issues
- industrial engineering
- estimating
- project and quality management.

In general, they:

- prepare specifications and drawings for mechanical components, equipment and systems
- inspect the construction of mechanical installations
- analyze the cost efficiency of projects
- prepare layouts for new machines, tool designs, plants and equipment
- conduct and analyze performance tests on various components, products or equipment.

Those working in design may provide CAD (computer aided design) services for engineering teams.

Some mechanical engineering technology graduates are employed as agricultural engineering technologists who design and develop specialized agricultural equipment, machines and structures.

Working Conditions

Mechanical engineering technologists usually work indoors in offices, laboratories, manufacturing and processing facilities but sometimes work outdoors at construction sites. They use computers for drafting, word processing and spread sheet functions. Overtime may be required to meet project deadlines.

Personal Characteristics

Mechanical engineering technologists need the following characteristics:

- the ability to visualize three-dimensional objects from two-dimensional drawings
- good sketching (drawing) skills
- good mathematics and mechanical problem-solving skills
- good oral and written communication skills
- the ability to work effectively as part of a team.

They should enjoy doing precise work, obtaining and analyzing test results, finding innovative solutions to problems and taking a methodical approach to their work.

Educational Requirements

The minimum educational requirement for working as a mechanical engineering technologist is a **diploma in mechanical engineering technology**.

In Alberta, the following institutions offer two year Mechanical Engineering Technology diploma programs.

- The **Northern Alberta Institute of Technology (NAIT)** in Edmonton. The entrance requirement is a high school diploma or equivalent with English 30, Pure Math 30 or Math 30 (or at least 60 per cent in Math 33 or Applied Math 30) and one of Science 30, Physics 30 or Chemistry 30. 33-level courses will only be considered after an interview with the program head, and students presenting Applied Math 30 may be required to upgrade. A career investigation report is required.
- The **Southern Alberta Institute of Technology (SAIT)** in Calgary. The first year of this program is a common first year in the Mechanical Technologies program. Students must achieve a grade point average (GPA) of at least 2.0 to progress to Mechanical Engineering Technology in their second year. The entrance requirement for the Mechanical Technologies program is a high school diploma with the following courses: English 30 or 33, Pure Math 30 and Physics 20, or successful completion of the Pre-Careers program at SAIT.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Other Requirements

(section revised OCTOBER 2004)

Certification with the Alberta Society of Engineering Technologists (ASET) is voluntary.

Under Alberta's Engineering, Geological and Geophysical Professions Act, Registered Professional Technologists - Engineering must be ASET members to engage in a defined scope of engineering practice as registered by the Association of Professional Engineers, Geologists and Geophysicists of Alberta (APEGGA).

Employment and Advancement

(section revised JANUARY 2006)

Mechanical engineering technologists are employed by:

- consulting engineering companies
- industrial, fabrication, manufacturing and construction companies
- mechanical equipment sales companies
- processing companies (e.g. in the chemical, oil, gas, pipeline and food industries)
- government and regulatory agencies.

They usually work as members of a team, specializing in fields related to industrial and plant engineering, production planning and control, mechanical design, estimating or quality management. They may also find employment as:

- computer drafting specialists
- designers
- planners
- inspectors
- cost estimators
- quality assurance coordinators
- purchasers.

Mechanical engineering technologists may advance to engineering supervisory or managerial positions, or move into self-employment in consulting or other service businesses.

Mechanical engineering technologists are part of the larger National Occupational Classification 2232: Mechanical Engineering Technologists and Technicians. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Professional and Technical Services**
- **Oil and Gas Extraction**
- **Metals, Metal Fabrication and Machinery Manufacturing**
- **Construction**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 1,750 Albertans are employed in the Mechanical Engineering Technologists and Technicians occupational group which is expected to grow 2.2 to 3.2 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 30 to 60 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since mechanical engineering technologists form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for mechanical engineering technologists.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Mechanical Engineering Technologists and Technicians occupational group working part-time or full-time earned from **$24,400 to $100,500 a year.** The average salary was **$67,000 a year.**

For more detailed information, see ASET's Annual Salary Surveys.

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Society of Engineering Technologists (ASET) website: www.aset.ab.ca

Construction Sector Council website: www.csc-ca.org

Related Occupational Profiles

Automated Systems Technologist
Biomedical Engineering Technologist
Engineering Design and Drafting Technologist
Industrial Engineering Technologist
Materials Engineering Technologist
Mechanical Engineer
Plastics Processing Technician
Transport Refrigeration Technician

Related High School Subjects

Design Studies; Fabrication Studies; Language Arts; Mathematics; and Science (Physics)

Related Post-Secondary Fields of Study

Engineering and Science Technologies

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Mediator

Produced OCTOBER 2005

Mediators are neutral third parties who assist people involved in disputes to find mutually acceptable resolutions to their conflicts.

NOC Number(s): 1121
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: I M S

Duties

Mediators use dispute resolution techniques to help disputants (people involved in disputes) to reach mutually satisfactory agreements. Mediators do not decide issues.

In general, mediators:

- facilitate communication between disputants
- help disputants to clarify the issues, identify underlying concerns and develop a better understanding of their respective needs and interests
- help disputants find creative solutions that are acceptable to all parties concerned.

If the disputants are not able to reach an agreement through mediation, they may choose other dispute resolution processes such as arbitration or litigation (for more information, see the Arbitrator and Lawyer occupational profiles).

Mediation has been used to settle many types of conflicts including disputes between:

- neighbours
- spouses
- labour and management
- environmental groups and industrial organizations
- landlords and tenants
- co-workers
- parents and teachers
- business partners
- businesses and their customers (e.g. insurance companies and injured parties)
- businesses and their suppliers.

Using mediation to resolve disputes may be faster and less expensive than going to court. It also allows disputants to:

- keep their arguments private and confidential
- retain control over the outcome of the dispute
- explore a wide range of possible solutions to their differences
- preserve or even improve ongoing business and personal relationships.

Since mediation is a voluntary process, it is best used when:

- there is some ongoing personal connection or interaction between the disputants
- both parties are willing to express personal wants and needs, and are committed to addressing these issues
- there is a commitment to settle using the mediation process
- there is a need to settle the dispute quickly and efficiently.

Working Conditions

Mediators work in a variety of physical environments. They may conduct meetings anywhere and at any time that is acceptable to all parties concerned.

Personal Characteristics

Mediators need the following characteristics:

- patience
- a neutral, unbiased attitude and a keen sense of fair play
- the ability to develop rapport with all kinds of people
- good communication skills including active listening skills and the ability to question effectively and tactfully
- the intellectual ability required to deal with complex factual material, analyze problems and identify and separate the issues involved
- the creativity required to help disputants identify mutually acceptable solutions.

They should enjoy synthesizing information to develop innovative approaches to problems, co-ordinating information, and dealing with people.

Educational Requirements

(section revised FEBRUARY 2006)

Although many mediators have a professional background, there are no specified minimum education requirements. Experience or training in conflict management is strongly recommended.

The Continuing Education or Extension departments of the following post-secondary institutions offer a certificate program in Conflict Management in co-operation with the **Alberta Arbitration and Mediation Society (AAMS)**:

- **Grande Prairie Regional College**
- **Grant MacEwan College** in Edmonton
- **Red Deer College**.

The AAMS program requires successful completion of 210 hours (30 days) of training including core and elective courses. Participants must successfully complete competency-based skill assessments in both negotiation and mediation. A two year time frame is recommended for completion of the program. There are no entrance requirements.

The **Legal Education Society of Alberta (LESA)** offers:

- a 40+ hour, hands-on, intensive Mediation of Family and Divorce Conflicts course approved by the **Association for Conflict Resolution**.
- a two and a half day Level I and Level II Mediation of Civil Disputes course
- a four day Interest-Based Negotiation course
- a two day Collaborative Law course.

Mount Royal College in Calgary offers a Conflict Resolution certificate program through Continuing Education. This 220 hour program includes seven required courses and at least five optional courses. One of the two final assessments (Mediation or Negotiation) must be successfully completed. Applicants must be 18 years of age or older.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Other Requirements

The Alternative Disputes Resolution (ADR) Institute of Canada Inc. offers the designation Chartered Mediator to members who have related training and experience. In Alberta, the Alberta Arbitration and Mediation Society is the regional association of the Institute.

The Alberta Family Mediation Society (AFMS) requires its members to have completed a minimum of 40 hours of Family and Divorce Mediation training. Members usually hold a degree in law, social work or psychology, or have equivalent qualifications. AFMS offers the designation Registered Family Mediator to members who have related training and experience, and conform to its standards of practice.

Employment and Advancement

Usually, mediators work in occupations and contract their services as mediators when they are needed.

When disputants agree to participate in mediation, they must find a mutually acceptable mediator, preferably someone who has training or experience in conflict management. They may obtain lists of trained mediators from organizations such as the Alberta Arbitration and Mediation Society, Alberta Family Mediation Society or ADR Institute of Canada.

Salary

Mediators' fees are negotiated with disputants at the beginning of the mediation process, and **vary greatly.** Sometimes, mediators volunteer their time. Lawyers, social workers, psychologists and other professionals who are also mediators usually charge fees that are in line with their other professional fee structures.

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alternative Disputes Resoltuion (ADR) Institute of Canada website: www.adrcanada.ca

Alberta Arbitration and Mediation Society (AAMS) website: www.aams.ab.ca

Alberta Family Mediation Society website: www.afms.ca/home.html

Legal Education Society of Alberta (LESA) website: www.lesa.org

Related Occupational Profiles

Aboriginal Liaison
Arbitrator
Family/Marriage Counsellor
Foreign Service Officer
Land Agent
Lawyer
Private Trainer/Facilitator
Psychologist
Social Worker

Related High School Subjects

Language Arts; Legal Studies; Management and Marketing; and Social Studies

Related Post-Secondary Fields of Study

Business, Management and Administrative Studies; Social Sciences, Law and Religious Studies; and Social, Community and Protective Services

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Medical Laboratory Technologist

Produced FEBRUARY 2005

Medical laboratory technologists perform a variety of laboratory tests and procedures to assist physicians in diagnosing, monitoring, treating and preventing disease.

NOC Number(s): 3211.1
Minimum Education: 2 years post-secondary education/training
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: **M I O**

Duties

In general, medical laboratory technologists:

- examine body fluids and tissues for abnormal chemical levels, cells or bacteria
- prepare tissue for microscopic examination by pathologists
- determine blood type for transfusions
- conduct medical research and analyses
- participate in quality assurance and quality control activities.

Medical laboratory technologists may specialize in the following areas:

- clinical chemistry - the chemical analyses of blood and other body fluids
- clinical microbiology - the culturing and identification of micro-organisms and the determination of antibiotic sensitivities
- hematology - the study of blood cells and their formation in health and disease and the investigation of coagulation factors and disorders
- histotechnology - the preparation of tissue specimens for microscopic examination
- transfusion medicine - the taking and testing of blood to determine its suitability for transfusions and the preparation of blood products
- cytotechnology - a specialized field in medical laboratory that involves the microscopic examination of prepared cellular slides for evidence of abnormality or disease
- molecular genetics.

Working Conditions

Medical laboratory technologists may perform a number of different activities, or they may specialize in a particular area and repeat the same series of tests throughout the day. Those who work with infectious patients and samples or hazardous chemicals must take safety precautions to avoid infection or injury.

Working hours for medical laboratory technologists vary depending on the type of laboratory in which they work. Research laboratories usually operate weekdays only. In diagnostic clinical laboratories, technologists work rotating shifts of days, evenings and nights including weekends and holidays.

Personal Characteristics

Medical laboratory technologists need the following characteristics:

- integrity
- an aptitude for mathematics and science and a keen interest in scientific work
- the ability to do detailed work and maintain a high level of accuracy
- manual dexterity
- good colour and form perception (to study blood cells, etc.)
- good communication and interpersonal skills.

They should enjoy taking a methodical approach to their work, analyzing results and establishing procedures, and using computers and specialized instruments for accurate and precise testing.

Educational Requirements

In Alberta, the following institutions offer medical laboratory programs that are at least two years in length:

- The **Northern Alberta Institute of Technology (NAIT)** in Edmonton offers a two year Medical Laboratory Technology diploma program. The entrance requirements are a high school diploma with English 30-1, Pure Math 30, Chemistry 30 and Biology 30, or equivalents, and keyboarding skills. Physics 20 is recommended. This is a quota program so higher marks are generally required to gain admission. A personal interview may be required prior to selection and acceptance. NAIT also offers a two year Cytotechnology diploma program. (Note: Students can complete training to become cytotechnologists without becoming registered medical laboratory technologists. However, training in both medical laboratory and cytotechnology provides some job diversification.)
- The **Southern Alberta Institute of Technology (SAIT)** in Calgary offers a two year Medical Laboratory Technology diploma program. The entrance requirements are a high school diploma or equivalent with English 30-1 (or English 30) or English 30-2 (or English 33), Pure Math 10 (or equivalent), Chemistry 20 and Biology 20, and English language proficiency. Applicants must demonstrate a keyboarding/data entry speed of at least 25 words per minute prior to admission to the program.
- The **University of Alberta** in Edmonton offers a four year Bachelor of Science (B.Sc.) degree program in Medical Laboratory Science. The entrance requirement is one pre-professional year of study with five full university-level courses including courses in English, biology, chemistry and statistics. Candidates then apply to the University of Alberta to complete the second, third and fourth year under the Faculty of Medicine and Dentistry. The third year is spent in practical laboratory training in Capital Health Authority laboratories and Dynacare Kasper Medical Laboratories. Fourth year involves a research project and courses in advanced laboratory techniques. Graduates of this program are eligible to write American as well as Canadian certification exams.

Post-secondary institutions across Alberta offer university transfer programs that allow students to apply up to two years of study toward university bachelor's degree programs. It is the student's responsibility to ensure that the courses they choose to take will be accepted for credit at the institution to which they wish to transfer.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Other Requirements

Under Alberta's Health Professions Act and Medical Laboratory Technologists Profession Regulation, registration with the Alberta College of Medical Laboratory Technologists (ACMLT) is mandatory if you meet identified competency requirements and conduct laboratory tests that are used by other registered members to provide professional services directly to the public, teach the practice of the profession to members or students of the profession, or supervise registered members who provide services to the public. Registered members who are authorized by the College provide restricted activities specified in the Regulation. Only registered members may call themselves Medical Laboratory Technologists. Laboratory workers who are not registered (regulated) may provide pre or post medical laboratory services.

Employment and Advancement

(section revised JANUARY 2006)

Graduates of technical and degree programs are employed in:

- hospital laboratories
- public health departments
- pharmaceutical laboratories
- veterinary research clinics
- agricultural, industrial, government or private laboratories
- post-secondary institutions.

In smaller clinical laboratories, technologists perform general duties in all sections of the laboratory. In most large labs, they may perform general duties or specialize in a particular area.

Advancement opportunities depend on ability and qualifications (experience and education).

Medical laboratory technologists are part of the larger National Occupational Classification 3211: Medical Laboratory Technologists and Pathologists' Assistants. In Alberta, most people employed in this classification work in the **Health Care and Social Assistance** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Health Care and Social Assistance industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

About 2,200 Albertans are registered medical laboratory technologists. The occupation is expected to grow 2.6 to 3.6 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 50 to 80 **new** positions will be created each year **in addition** to job openings created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Medical Laboratory Technologists and Pathologists' Assistants occupational group working part-time or full-time earned from **$25,200 to $54,800 a year.** The average salary was **$47,200 a year**

For information about current collective agreements in the public and not-for-profit sectors, see the Health Sciences Association of Alberta (HSAA) website.

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta College of Medical Laboratory Technologists website: www.acmlt.org

Health Sciences Association of Alberta (HSAA) website: www.hsaa.ca

Related Occupational Profiles

Biological Technician
Canadian Forces Personnel - Non Commissioned
Combined Laboratory and X-Ray Technologist

Related High School Subjects

Community Health; Information Processing; Language Arts; Mathematics; and Science (Biology; and Chemistry)

Related Post-Secondary Fields of Study

Health Care and Medical Sciences

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Medical Secretary

Produced OCTOBER 2005

Medical secretaries support doctors and other health care professionals by performing a wide variety of clerical and administrative tasks such as scheduling appointments, word processing, bookkeeping/accounting, photocopying, filing and answering telephone calls and correspondence.

NOC Number(s): 1243
Minimum Education: 1 year post-secondary education/training
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: **S O d**

Duties

Duties and responsibilities vary from one type of health care organization to another but, in general, medical secretaries:

- answer the telephone, schedule and confirm medical appointments, greet patients and receive and communicate messages
- use health software and other computer applications to book appointments or prepare reports, invoices, financial statements, letters, case histories and medical records
- interview patients to complete intake forms or other documents, or help patients complete health history forms
- complete insurance and other claim forms
- process payments, bank documents and accounts receivable
- set up and maintain records management systems including classifying and coding electronic and hardcopy files
- operate sophisticated office equipment such as voice mail messaging systems and document scanners
- keep examination areas clean, orderly and stocked with supplies
- perform other clerical and administrative functions as required (e.g. order and maintain an inventory of supplies).

In large offices, these duties are divided among several people.

Working Conditions

Medical secretaries work in health care settings. They may work standard office hours or be required to work some evenings and weekends. Much of their shift is spent on their feet and they are routinely required to lift items weighing up to 10 kg. Those who work in hospitals and doctor's offices may regularly be exposed to contagious diseases.

Personal Characteristics

Medical secretaries need the following characteristics:

- the ability to maintain patient confidentiality
- excellent oral and written communication skills
- good organizational and time management skills
- the ability to maintain accuracy while multi-tasking or working under pressure
- a mature attitude toward the human body, wellness and disease processes
- the ability to follow directions closely and accurately
- the ability to establish a professional rapport with and instill confidence in patients
- the ability to deal effectively with the difficult behaviours sometimes exhibited by people in distress
- the ability to work independently or as part of a team.

They should enjoy dealing with people, operating equipment such as computers, and compiling and organizing information.

Educational Requirements

(section revised FEBRUARY 2006)

Most employers require medical secretaries to be able to type at least 50 words per minute with a maximum of three errors, preferably 60 words per minute, and have a related post-secondary certificate or diploma. Knowledge of medical terminology and some medical instruments/tray items is essential.

In Alberta, many colleges, technical institutes and private vocational schools offer secretarial and office administration programs. For a listing, see the Administrative Assistant occupational profile. The following institutions offer programs specifically for administrative assistants in medical offices:

- **Academy of Learning**, a private vocational school in Calgary, Edmonton, High River and Red Deer, offers a 44 week Medical Office Assistant program. The entrance requirements are a high school diploma or equivalent.
- **Alberta Career Computer Center Inc.**, a private vocational school in Edmonton, offers a 26 week Medical Office Administration program. The entrance requirement is a high school diploma with a Grade 12 English and Math 10 or any Grade 11 math, or equivalent.
- **Bow Valley College** in Calgary offers a 22 week Medical Office Assistant program. The entrance requirement is at least three Grade 11 subjects, including English 20 or 23, or a GED and a typing speed of at least 20 words per minute.
- The **CDI College of Business, Technology and Healthcare**, a private vocational school in Calgary and Edmonton, offers a 36 week Medical Administrative Assistant program. The entrance requirement is a high school diploma with Grade 12 English and math, or equivalent.
- **Columbia College**, a private vocational school in Calgary, offers a 20 week Medical Administration/Clinical Assistant program. The entrance requirement is Grade 12 or equivalent.
- **Grant MacEwan College** in Edmonton offers a one year Medical Secretary program. The entrance requirement is a high school diploma or equivalent. Applicants must successfully complete an English appraisal (or have at least 65 per cent in English Language Arts 30-1 or English 30, or 75 per cent in ELA 30-2 or English 33) and a keyboard entrance test (30 words per minute with no more than six errors).
- **HCC Choice College**, a private vocational school in Spruce Grove, offers a 25 week Medical Clinical Assistant program. The entrance requirement is a high school diploma with Grade 12 English and Math 10 or any Grade 11 math, or equivalent.
- **Prestwick College** in Calgary offers a 47 week Clinic Office Administrator prgram. The entrance requirement is a high school diploma with Grade 12 English and math, or equivalent.
- **Reeves College**, a private vocational school in Calgary, Edmonton and Lloydminster, offers a 33 week Medical Office Assistant program. The entrance requirement is a high school diploma with a Grade 12 English and math, or equivalent.
- **Slate Training Centre** in Edmonton offers a 34-week Medical Administrative Assistant program. The entrance requirement is a high school diploma with English 30 or 33 or equivalent.
- the **Southern Alberta Institute of Technology (SAIT)** in Calgary offers a five month Health Information Office Assistant certificate. The entrance requirement is a high school diploma with at least 60 per cent in English Language Arts 30-1 or 30-2 and Biology 30, or equivalent.

Continuing education programs are often offered on an as needed basis.

For current information on programs and mature student admission policies, please check post-secondary calendars or websites.

Prospective students should investigate the suitability and reputation of training programs with employers before enrolling in a program. For information about related post-secondary programs, see the Unit/Ward Clerk occupational profile.

Employment and Advancement

(section revised JANUARY 2006)

Medical secretaries are employed in:

- doctor's offices
- hospitals
- medical clinics and other health care settings
- public and private insurance companies
- health software companies.

In large organizations, experienced medical secretaries may move into supervisory positions.

In Alberta, most people employed in the Medical Secretaries occupational group work in the **Health Care and Social Assistance** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Health Care and Social Assistance industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 3,100 Albertans are employed in the Medical Secretaries occupational group which is expected to grow 2.1 to 3.1 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 60 to 100 **new** positions will be created each year **in addition** to job openings created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Medical Secretaries occupational group working part-time or full-time earned from **$12,400 to $51,800 a year.** The average salary was **$25,100 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Related Occupational Profiles

Administrative Assistant
Health Information Management Professional
Medical Transcriptionist
Unit Clerk

Related High School Subjects

Communication Technology; Community Health; Financial Management; Language Arts; Management and Marketing; and Mathematics

Related Post-Secondary Fields of Study

Clerical and Administrative Support

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Medical Transcriptionist

Produced NOVEMBER 2005

Medical transcriptionists are medical language specialists who interpret and transcribe medical dictation that details patient care during and after an illness or injury.

NOC Number(s): 1244.2
Minimum Education: 1 year post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **M O i**

Duties

Medical transcriptionists transcribe documents such as:

- discharge summaries
- history and physical examination reports
- operation reports
- consultation reports
- autopsy reports
- radiology reports
- obstetrical reports
- referral letters.

The medical reports they produce become permanent records of medical, scientific and legal value.

Medical transcriptionists who are employed in medical clinics and offices often have additional office responsibilities such as:

- receiving patients
- scheduling appointments
- answering the telephone
- handling incoming and outgoing mail
- completing and submitting Alberta Health Care Insurance claims
- maintaining patient records.

Working Conditions

Medical transcriptionists work in office environments and spend most of their time sitting in front of computers. Some evening or weekend work may be required.

Some experienced medical transcriptionists work from their homes, providing medical transcription services to regional health authorities and private physicians.

Personal Characteristics

Medical transcriptionists need the following characteristics:

- excellent written communication skills
- an aptitude for languages
- the ability to maintain confidentiality
- the ability to work with little direction and supervision from others
- analytical skills
- a willingness to keep up to date with new medical terminology related to medical and surgical specialties.

Transcriptionists employed in clinics also need good interpersonal skills. Those employed in other types of environments should enjoy working in a quiet environment without a lot of patient contact.

All medical transcriptionists should enjoy work that requires attention to detail.

Educational Requirements

(section revised DECEMBER 2005)

Medical transcriptionists need the following skills and knowledge:

- excellent knowledge of medical terminology
- knowledge of anatomy and physiology, pathophysiology, diagnostic and treatment modalities
- knowledge of medical transcription guidelines and rules of style
- strong word processing skills and experience using transcribing equipment
- proficiency in English grammar and punctuation
- advanced editing and proofreading skills.

Most people entering this field have completed a one year education program that includes a medical terminology course at a recognized post-secondary institution.

- **Bow Valley College** in Calgary offers a one year Medical Transcriptionist certificate program. The entrance requirements are at least 60 per cent in English 30-2 or 30-1 (English 30 or 33) and Biology 30 or successful completion of Grade 12 or equivalent.
- The **Northern Alberta Institute of Technology (NAIT)** in Edmonton offers a one year Medical Transcription certificate program. The entrance requirements are a high school diploma with English Language Arts 30-1 or 30-2 (or English 30 or 33) and a typing speed of 30 words per minute. Courses in biology and chemistry are recommended.
- The **Southern Alberta Institute of Technology (SAIT)** in Calgary offers a one year Medical Transcriptionist certificate program. The entrance requirement is a high school diploma with at least 60 per cent in ELA 30-1 or 30-2 (or English 30 or 33) and Biology 30. By the end of the first semester of the program (December), students must have achieved a typing speed of 40 words per minute in a five minute timing with no more than five errors.

Related programs of study such as Health Information Management, Medical Secretary and Medical Office Assistant programs are offered by post-secondary institutions throughout the province (for more information, see the Health Information Management Professional and Medical Secretary occupational profiles). Programs vary in content, length, admission requirements and cost. Prospective students should thoroughly investigate a program and its reputation with employers before enrolling.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

(section revised JANUARY 2006)

Most medical transcriptionists are employed in settings where large numbers of physician-dictated patient reports are transcibed:

- hospitals
- medical research facilities
- medical laboratories
- diagnostic imaging centres.

Others are employed in:

- clinics
- physicians' offices
- coroner or medical examiner offices
- university medical schools
- medical insurance companies
- government agencies (e.g. Workers' Compensation Board)
- medical transcription companies.

Some self-employed medical transcriptionists provide transcription services on a contract basis.

Experienced transcriptionists may advance to supervisory positions in hospitals and other health care facilities where there are a number of transcriptionists employed.

Medical transcriptionists are part of the larger National Occupational Classification 1244: Court Recorders and Medical Transcriptionists. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Health Care and Social Assistance**
- **Management, Administrative and Other Support Services**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 700 Albertans are employed in the Court Recorders and Medical Transcriptionists occupational group which is expected to grow 1.0 to 2.0 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover. (**Note**: Since medical transcriptionists form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for medical transcriptionists.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Salaries vary according to responsibilities and experience, and according to salary scales established through union contracts.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Medical Transcriptionists occupational group working part-time or full-time earned from **$18,300 to $56,900 a year.** The average salary was **$34,400 a year.**

For information about current collective agreements in the public and not-for-profit sectors, see the Health Sciences Association of Alberta (HSAA) website.

Other Sources of Information

EDinfo website: www.alis.gov.ab.ca/edinfo

Health Sciences Association of Alberta (HSAA) website: www.hsaa.ca

Related Occupational Profiles

Health Information Management Professional
Legal and Realtime Reporter
Medical Secretary
Unit Clerk
Word Processing Operator

Related High School Subjects

Community Health; Information Processing; Language Arts; Languages (other than English); and Science (Biology)

Related Post-Secondary Fields of Study

Clerical and Administrative Support

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Mental Health Worker

Produced JUNE 2005

Mental health workers help people deal with personal and social problems by teaching related skills and providing information and support.

NOC Number(s): 4212
Minimum Education: 2 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: S M I

Duties

Mental health workers work with a variety of clients on an individual basis or in groups. Duties vary considerably from one job to another but, in general, mental health workers:

- develop, organize and facilitate the delivery of mental health promotion and prevention programs
- assess client needs, identify problems and work with interdisciplinary teams to devise and implement treatment plans
- work closely with clients' families, physicians, psychiatrists, psychologists and other health providers
- act as advocates for clients and co-ordinate required services
- provide early intervention and appropriate referral services
- provide support for clients and their families
- help clients develop skills and strategies for dealing with their problems
- help clients manage medications
- maintain confidential records of client progress
- provide links between mental health services and culturally relevant programs and services
- address mental health issues in the community as a whole
- keep up to date with new developments in their field by reading professional literature, attending courses and seminars, and establishing and maintaining contact with other social agencies.

Working Conditions

Mental health workers may work a standard work week in an office environment or work shifts including evenings and weekends.

This work can be stressful and demands emotional maturity. Mental health workers may have to deal with incidents of aggression or behavioural problems.

Personal Characteristics

Mental health workers need the following characteristics:

- good verbal and written communication skills including the ability to listen non-judgementally and with empathy and understanding
- emotional maturity and good judgement
- problem solving skills
- decision making skills
- genuine interest in helping people resolve their problems
- interest in taking a multidisciplinary, cultural, holistic approach to mental health
- interest in exploring cultural diversity and poverty issues that impact mental health
- the ability to keep contacts with clients on a professional level
- creative ability to develop new programs or ways of doing things.

They should enjoy helping others, compiling information and maintaining contact with other agencies, and developing innovative approaches to problems.

Educational Requirements

Mental health workers' academic qualifications vary greatly. Most mental health workers have **post-secondary education** in a discipline related to mental health such as nursing, psychology, social work, occupational therapy or recreation therapy. They may be required to be registered, certified or accredited by their particular professional associations before they may work in the mental health field.

Related programs are offered by post-secondary institutions throughout Alberta. For more information, see the appropriate occupational profiles (e.g. Addictions Counsellor, Registered Nurse, Psychiatric Nurse, Psychologist, Social Worker, Occupational Therapist, Recreation Therapist). Cultural awareness and the ability to communicate in languages other than English, including First Nations languages, are definite assets.

Grant MacEwan College in Edmonton offers a two year Mental Health diploma program that is designed for people interested in doing community resource work in Aboriginal communities. The entrance requirements are a high school diploma with English 30-1 (or English 30, at least 75 per cent in English 30-2 or English 33, or successful completion of an exam). Accepted applicants are required to complete a criminal record check.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

(section revised JANUARY 2006)

Mental health workers are employed in:

- correctional facilities
- health care and rehabilitation clinics and hospitals
- social service agencies
- family and community services
- private practices
- counselling centres
- healing and wellness centres
- educational institutions.

They may work in urban or rural settings.

Advancement opportunities depend on the size and nature of the employing organization and the mental health worker's qualifications.

Mental health workers are part of the larger National Occupational Classification 4212: Community and Social Service Workers. In Alberta, over 75 per cent of people employed in this classification work in the **Health Care and Social Assistance** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Health Care and Social Assistance industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 9,600 Albertans are employed in the Community and Social Service Workers occupational group which is expected to grow 1.7 to 2.7 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 160 to 260 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since mental health workers form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for mental health workers.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Salaries for mental health workers vary considerably depending on job location, type of employer, position responsibilities and worker qualifications.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Community and Social Service Workers occupational group working part-time or full-time earned from **$14,100 to $104,900 a year**. The average salary was **$27,800 a year**.

For information about current collective agreements in the public and not-for-profit sectors, see the Health Sciences Association of Alberta (HSAA) website.

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Health Sciences Association of Alberta (HSAA) website: www.hsaa.ca

Related Occupational Profiles

Aboriginal Liaison
Addictions Counsellor
Child and Youth Care Worker
Community Health Representative
Expressive Arts Therapists
Family/Marriage Counsellor
Life Skills Coach
Psychiatric Nurse
Psychologist
Registered Nurse
Rehabilitation Practitioner
Social Worker

Related High School Subjects

Community Health; Language Arts; Languages (other than English); Mathematics; Physical Education; Science (Biology); and Social Studies

Related Post-Secondary Fields of Study

Health Care and Medical Sciences; Social Sciences, Law and Religious Studies; and Social, Community and Protective Services

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For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Messenger/Courier

Produced SEPTEMBER 2002

Messengers sort, collect and deliver letters, telegrams, packages or messages; run errands; distribute office supplies and perform similar routine duties.

NOC Number(s): 1463
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **M o s**

Duties

Government messengers have regularly scheduled duties such as delivering incoming and outgoing mail and office communications, running postal meters, checking for incoming dispatches and occasionally making special trips for managers. They may also be responsible for maintaining and delivering office supplies, filing, sorting materials and doing other odd jobs.

Messengers employed in large businesses have much the same duties as those in government. They may operate postage meters, envelope sealers or simple duplicating machines, or may be in charge of a stockroom. **Bank messengers** collect and deliver cheques, securities, mail and other items.

Couriers are employed by delivery businesses providing letter and package pickup and delivery services on short notice and pre-scheduled runs. They generally operate vehicles, ranging from small cars and vans to three-ton trucks. Some messengers in congested urban areas walk or use bicycles in the downtown core area.

Working Conditions

Messengers and couriers generally use pagers, radio dispatch or cellular communication systems to keep in touch with dispatchers. They may be required to lift packages weighing over 25 kilograms. Those who travel outdoors work in all kinds of weather.

Most office messengers work regular office hours, but some commercial companies require messengers to work shifts. Couriers who are owner/operators sometimes work twelve-hour days.

Personal Characteristics

Many messengers and couriers have chosen this type of work because they value working with little direction and supervision from others, some variety in tasks and the opportunity for contact with people. Since they are not under constant supervision, messengers must be conscientious and responsible. They may also have to be "bondable" (acceptable to an insurance company as a law-abiding, responsible person).

Educational Requirements

There are no minimum education requirements in this occupation, but a high school diploma with business courses is a definite advantage when applying for promotions.

Messengers and couriers who operate vehicles must have a valid driver's licence. Couriers should have a good knowledge of the city in which they wish to work and, if they are hired on contract, must own a dependable vehicle. Contractors may be required to pay for the required insurance and cargo bond licensing.

Employment and Advancement

(section revised JANUARY 2006)

Messengers and couriers are employed by large businesses, governments and private courier companies.

Couriers may be employees or self-employed contract workers. Where couriers work on a contract basis, the company may provide the radio, uniforms and documents. Other courier companies provide vehicles and pay an hourly wage.

Opportunities for advancement are limited without further education.

In Alberta, over 75 per cent of people employed as messengers/couriers work in the following industries:

- **Transportation and Warehousing**
- **Information, Culture and Recreation**
- **Retail Trade**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

About 5,000 Albertans are employed in the Couriers, Messengers and Door-to-Door Distributors occupational group which is expected to grow 1.0 to 2.0 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 40 to 100 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since messengers/couriers form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for messengers/couriers.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised SEPTEMBER 2005)

Wages for messengers and couriers vary a great deal, depending on the volume and nature of service. Self-employed couriers who own their own vehicles may earn considerably more, but must pay their own business expenses and often work long hours.

According to the **2005 Alberta Wage and Salary Survey**, part-time or full-time starting salaries for Albertans working in the Couriers, Messengers and Door-to-Door Distributors occupational group ranged from **$14,300 to $35,700 a year.** After three years, salaries ranged from **$23,500 to $48,600 a year.** The average salary was **$32,200 a year**.

Related Occupational Profiles

Letter Carrier
Truck Driver
Vending Machine Route Worker

Related High School Subjects

Language Arts; and Physical Education

Related Post-Secondary Fields of Study

Driver Training; and Personal and Food Services

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Meteorologist

Produced OCTOBER 2005

Meteorologists study the physics, chemistry and dynamics of the atmosphere and its interaction with land and water surfaces, weather, climate, climate change and their effect on people's health and safety, the economy and the earth's ecosystems.

NOC Number(s): 2114
Minimum Education: 4 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **I O D**

Duties

In general, meteorologists may be involved in:

- weather forecasting
- providing consulting services regarding weather and climate, air quality, sea and lake ice, or hydrology (for more information, see the Hydrologist occupational profile)
- conducting research and developing models
- applying meteorological knowledge to problems in agriculture, forestry, air pollution, water management, energy, hydrometeorology (water in the atmosphere), transportation, national defense or the arctic environment
- supporting management activities through business planning, policy development and performance measurement.

Meteorologists may work as applied meteorologists, climatologists, research meteorologists, instrumentation specialists or weather broadcasters.

- **Applied meteorologists** provide analyses, forecasts, warnings and advice tailored to the requirements of a business, a governmental organization, or an industry (e.g. transportation, energy, agriculture, forestry, recreation).
- **Climatologists** study weather records gathered over long periods of time and conduct numerical simulations of climate conditions to understand and predict global changes and long-term or seasonal weather patterns for specific regions, and anticipate the impact of climate change and adaptation strategies.
- **Research meteorologists** study the dynamic, physical or chemical processes of the atmosphere and its interaction with land and ocean surfaces. They may study small-scale phenomena (e.g. clouds, the electrical and chemical properties of the atmosphere), large-scale phenomena (e.g. transport of air pollutants, hurricanes) or be involved in developing mathematical simulation models for weather and climate prediction.
- **Instrumentation specialists** develop instruments and systems to measure and record weather variables.
- **Weather broadcasters** provide weather forecasts and other weather information to the public via television, radio and the Internet.

Working Conditions

Most meteorologists are stationed in urban centres and work in an office setting.

Applied meteorologists at weather centres often work rotating shifts that include night shifts and sometimes work alone.

Weather broadcasters often work evening shifts and may work long hours during weather-related emergencies.

Personal Characteristics

Meteorologists need the ability to:

- communicate effectively in person and in writing
- think conceptually in multiple dimensions
- apply theoretical concepts and analyze large volumes of information

- make decisions under the pressure of fixed deadlines and varying workload
- work alone or as part of a team.

They should enjoy co-ordinating and conducting research, using instruments and equipment to perform tasks requiring precision, and working with people.

Educational Requirements

The minimum education requirement is a Bachelor of Science (B.Sc.) degree in atmospheric sciences. However, most routine forecast production work has been automated and employment prospects are best for meteorologists who have master's or doctoral degrees as well as computer skills, communication skills and marketing skills. They must be able to plan and carry out investigations, develop and test theories and models, and prepare papers and reports.

In general, the entrance requirement for a master's degree program in meteorology or atmospheric sciences is a B.Sc. in mathematics, physics, chemistry, meteorology or atmospheric science with a minimum specified average in the last two years of study. Universities and university colleges located throughout Alberta offer B.Sc. degree programs in mathematics, physics and chemistry.

The **University of Alberta** in Edmonton offers a four year B.Sc. degree program specifically in atmospheric sciences. The entrance requirement is a competitive average (65 to 80 per cent) in English Language Arts 30-1 or English 30, Pure Math 30 or Math 30, Physics 30, Chemistry 30 and one other approved Grade 12 subject. The University of Alberta also offers master's and doctoral (PhD) degree programs in atmospheric sciences.

Outside of Alberta, the following institutions offer master's and doctoral degree programs atmospheric sciences/meteorology:

- Dalhousie University in Halifax
- McGill University in Montreal
- University of British Columbia in Vancouver
- University of Quebec at Montreal (instruction in French)
- University of Toronto
- University of Victoria
- York University in Toronto

Post-secondary institutions throughout Alberta offer university transfer programs that allow students to apply up to two years of study toward university Bachelor's degree programs. It is the student's responsibility to ensure that the courses they choose to take will be accepted for credit at the insitution to which they wish to transfer.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Other Requirements

The Canadian Meteorological and Oceanographic Society endorses weather broadcasters who apply for endorsement and meet qualification criteria.

Employment and Advancement

The **Meteorological Service of Canada**, part of Environment Canada, has been and still is the largest employer of meteorologists in Canada. However, a growing number of meteorologists are employed in the private sector, providing value added and specialist meteorological products and services (e.g. related to road conditions, offshore oil and gas operations, forest fire services, wind and solar energy).

The number of meteorologists employed by Environment Canada is expected to remain constant. Normal employee turnover will probably create 30 to 35 job openings each year. Meteorologists also are employed by:

- private meteorology firms
- environmental consulting firms
- companies in the transportation and energy sectors.

There are a few broadcast meteorologists in Alberta. For related information, see the Announcer and Reporter occupational profiles.

Meteorologists who have doctoral degrees may be employed as instructors and researchers at universities.

Salary

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Meteorologists occupational group working part-time or full-time earned from **$41,300 to $83,200 a year.** The average salary was **$67,400 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Canadian Meteorological and Oceanographic Society (CMOS) website: www.cmos.ca

Related Occupational Profiles

Canadian Forces Personnel - Commissioned Officer
Oceanographer

Related High School Subjects

Communication Technology; Information Processing; Language Arts; Mathematics; and Science (Chemistry; and Physics)

Related Post-Secondary Fields of Study

Sciences

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Microbiologist

Produced SEPTEMBER 2005

Microbiologists study the growth and characteristics of micro-organisms (viruses, bacteria, fungi, parasites) and their interactions with their environment, and develop medical and industrial applications (for example, in the food processing industry).

NOC Number(s): 2121.2
Minimum Education: 4 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: I O D

Duties

Microbiologists study the biochemical, physiological and genetic aspects of micro-organisms, and how micro-organisms interact. In general, this involves:

- working in or creating aseptic conditions
- studying human diseases caused by micro-organisms
- conducting experiments to isolate and grow cultures of specific micro-organisms under controlled conditions
- isolating, analyzing and genetically manipulating nucleic acids, proteins and other substances produced by micro-organisms
- performing tests on water, food and the environment to detect harmful micro-organisms and control sources of pollution and contamination
- observing, identifying and classifying micro-organisms
- isolating and genetically modifying micro-organisms involved in breaking down pollutants
- developing genetically modified microbes for use in the production of genetically engineered biological products (proteins) or for gene transfer.

Microbiologists use a variety of specialized equipment such as gas chromatographs and high pressure liquid chromatographs, electrophoresis units, thermocyclers, fluorescence activated cell sorters and phosphoimagers.

Microbiologists may specialize in fields such as:

- bacteriology, conducting research into the characteristics of bacteria or a particular aspect of bacteriology such as public health bacteriology
- pharmaceutical bacteriology, hospital (clinical) bacteriology, environmental microbiology, food microbiology or biotechnology
- immunology, studying immune reactions in humans or animals
- molecular microbiology, investigating how bacteria or viruses function at the molecular level
- eukaroytic microbiology, studying fungi, parasites or protozoa
- virology, studying viruses.

Medical microbiologists help scientists and physicians in the diagnosis, prevention and treatment of infections in animals and humans by investigating:

- how organisms cause disease and their role in disease processes
- factors contributing to the occurrence of disease in a population
- how epidemics can be controlled.

Microbiologists employed in industry may be involved in quality control and the application of good laboratory practice or good manufacturing practice.

Work in microbiology is often interdisciplinary so microbiologists may work closely with chemists, biochemists, geneticists, pathologists, physicians, environmental scientists, engineers, veterinarians or geologists.

Working Conditions

Some microbiologists, particularly those working in environmental, agricultural and veterinary fields, work outdoors some of the time. However, most of the work is indoors in laboratories and on computers. The pressure of having to meet project deadlines can be stressful.

Following safety rules is extremely important to avoid chemical injury and exposure to infection when working with pathogens. Preventive inoculations help to protect medical microbiologists from the risk of disease.

Personal Characteristics

Microbiologists need the following characteristics:

- an inquiring mind and a wide interest in natural phenomena
- good communication skills
- manual dexterity (for transferring micro-organisms from one culture medium to another without contaminating samples, and for mounting and staining specimens)
- patience
- the ability to pay attention to detail
- a strong interest and aptitude for chemistry, biochemistry and genetics.

They should enjoy synthesizing information to find innovative solutions to problems, working with instruments and equipment at tasks which require precision, and directing the work of others.

Educational Requirements

The minimum education requirement is a four year bachelor of science degree in microbiology, biochemistry or genetics with some background in chemistry. Those who have a bachelor's degree are qualified to work as laboratory assistants or technicians. A master's degree or PhD is usually required for senior research positions. Those who have PhDs may continue their training as post-doctoral fellows.

Medical microbiologists preparing to work in hospitals usually take a medical degree, then specialize in microbiology or pathology (for more information, see the Physician and Pathologist occupational profiles). Those planning to work in medical research laboratories or medical diagnostic laboratories may take a B.Sc. degree in Medical Laboratory Science, or a B.Sc. degree plus a related two year diploma. For some positions, other forms of certification also may be required.

Admission to graduate degree programs generally requires an acceptable average in the last two years of a related bachelor's degree program. Post-secondary institutions throughout Alberta offer bachelor's degree programs in biological sciences and university transfer programs that allow students to apply up to two years of study toward bachelor's degree programs. It is the student's responsibility to ensure that the courses they choose to take will be accepted for credit at the institution to which they wish to transfer.

The following post-secondary institutions offer graduate degree programs as well as bachelor's degree programs that include courses in microbiology:

- The **University of Alberta** in Edmonton offers a four year B.Sc. degree program in microbiology that is also offered as a co-operative education program. The University also offers M.Sc. and PhD degree programs in cell biotechnology and microbiology, and medical microbiology and immunology.
- The **University of Calgary** offers B.Sc., M.Sc. and PhD degree programs in cellular, molecular and microbial biology in the Department of Biological Sciences. The Faculty of Medicine offers a Bachelor of Health Sciences degree program with a specialization in biomedical science. The Department of Biochemistry and Molecular Biology offers M.Sc. and PhD programs.
- The **University of Lethbridge** offers a four year B.Sc. degree program in agricultural biotechnology that is also offered as a co-operative education program. The university also offers a M.Sc. degree program in which the primary emphasis may be microbiology.

Entrance requirements for bachelor's degree programs vary from one program to another but, in general, include a high school diploma with a competitive average (ranging from 65 to 80 per cent) in English Language Arts 30-1, Pure Math 30, Biology 30, Chemistry 30 and one other approved 30-level subject (Physics 30 and Math 31 recommended).

For information about mature student admission policies and entrance requirements for specific programs, please check post-secondary calendars or websites.

Other Requirements

Professional Biologist is a protected title under Alberta's Professional and Occupational Associations Registration Act. This means that to call yourself a Professional Biologist, you must be a registered member of the Alberta Society of Professional Biologists (ASPB). You do **not** have to be registered with ASPB if you do not call yourself a Professional Biologist.

Employment and Advancement

(section revised JANUARY 2006)

Microbiologists who have B.Sc. degrees may work as technologists in post-secondary, government or industrial laboratories. Those who have M.Sc. degrees may work as professionals in the same laboratory settings. Microbiologists who have PhDs may conduct research, teach in universities, manage hospital (clinical) diagnostic microbiology laboratories or advance to senior scientific appointments in government or industry.

Microbiologists work for the following types of organizations:

- municipal, provincial and federal governments
- hospitals, colleges and universities
- laboratories in the food processing industry
- companies in the agricultural industry
- pharmaceutical companies
- diagnostic laboratories
- biotechnology firms
- bioremediation companies
- companies in the oil industry.

Contract work is becoming more common in this occupation. Advancement opportunities depend on the size and nature of the employing organization and the microbiologist's qualifications.

Microbiologists are part of the larger National Occupational Classification 2121: Biologists and Related Scientists. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Professional and Technical Services**
- **Public Administration**
- **Health Care and Social Assistance**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

About 1,100 Albertans are employed in the Biologists and Related Scientists occupational group which is expected to grow 1.3 to 2.3 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 10 to 30 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since microbiologists form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for microbiologists.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Microbiologists' salaries vary considerably depending on their responsibilities and qualifications (for example, whether they have a B.Sc. degree and are working as technicians or have a PhD degree and are conducting research).

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Biologists and Related Scientists occupational group working part-time or full-time earned from **$17,000 to $99,400 a year.** The average salary was **$64,600 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Society of Professional Biologists website: www.aspb.ab.ca

Canadian Council for Human Resources in the Environment Industry website: www.cchrei.ca

Related Occupational Profiles

Agrologist
Biochemist
Biologist
Biotechnologist
Ecologist
Entomologist
Food Scientist
Forensic Laboratory Analyst
Geneticist
Pathologist
Pharmacologist
Physiologist
Toxicologist

Related High School Subjects

Community Health; Foods; Forestry; Language Arts; Mathematics; Science (Biology; Chemistry; and Physics); and Wildlife

Related Post-Secondary Fields of Study

Health Care and Medical Sciences; and Sciences

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Midwife

Produced JANUARY 2005

Midwives are primary health care profesionals who provide continuity of care for women and babies throughout pregnancy, birth and six weeks after birth.

NOC Number(s): 3232.1
Minimum Education: 4 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **S I D**

Duties

In general, midwives:

- educate women about pregnancy, labour, delivery and the post-partum period, and encourage them to make their own health care decisions
- examine women during pregnancy and assess their physical and psychological well-being
- identify potentially abnormal conditions during pregnancy and advise clients about alternative care options
- consult or refer clients to other health care professionals in the event of potentially abnormal conditions and/or according to client wishes
- counsel and educate women concerning diet, exercise and other pre-natal health practices
- monitor the condition of the mother and baby during labour
- use hands-on skills to assist women in birthing babies
- provide emotional support to clients and their families during labour, birth and the post-partum period
- administer emergency measures and arrange for immediate contact with physicians when abnormal conditions arise
- examine and care for newborn infants
- educate clients about breast feeding, infant care, and newborn growth and development
- visit clients during the post-natal period at home or in hospital, instruct clients in how to care for themselves and their babies and provide ongoing support
- prescribe and fit birth control devices
- counsel individuals and conduct classes about pregnancy and childbirth, parenthood, family planning and other related topics
- maintain records and write reports.

Working Conditions

Midwives work in clients' homes and in clinics, hospitals and birth centres. They may be required to stand, kneel, bend or squat for long periods of time. Some lifting (up to 25 kilograms) is required.

Midwives may be on call 24 hours a day and work long, unpredictable hours. Some midwives work together so no one person has to be on call all of the time.

Midwives must have reliable vehicles and the equipment required to practice midwifery.

Personal Characteristics

Midwives need the following characteristics:

- a genuine concern for people and the ability to accept them as they are
- good health, stamina and energy
- flexibility
- the maturity and emotional stability required to instill confidence and deal with emergency situations

- good organizational skills.

They should enjoy counselling and educating women and their families.

Educational Requirements

In Alberta, regulations and competencies for the practice of midwifery were established in 1994. The Midwifery Regulations Advisory Committee (MRAC) has established a framework for registering midwives and regulating midwifery practice.

Many of the midwives currently practising in Alberta have taken their training in other countries or have taken distance education courses and apprenticed with practising midwives. On an ongoing basis, they take further education courses such as neonatal resuscitation and Red Cross basic resuscitation workshops.

In Ontario, **McMaster University**, **Ryerson University** and **Laurentian University** jointly offer a four year Bachelor of Health Sciences (BHSc) degree program in midwifery. Students with previous university courses or other academic experience may be eligible for transfer or challenge credit for non-clinical courses. Approximately half of the program is spent in clinical placements with qualified midwives. Students wishing part-time study must be enrolled at Ryerson University and may take up to seven years to complete the program.

There are two stages in the application process for the BHSc degree program in midwifery:

1. Submission of a completed General University Application form. The form and submission instructions are on the **Ontario Universities' Applications Centre** website.
2. Submission of an application for the Midwifery Education Programme to **one** of the three universities. Forms and instructions are on university websites.

Overall enrollment in the program is limited to 35 to 45 students a year and the application process is highly competitive. The minimum entrance requirement is a high school diploma or equivalent with at least 70 per cent in English, a social science, and biology or chemistry.

Other Requirements

(section revised FEBRUARY 2005)

Midwife is a protected title under Alberta's Health Disciplines Act and Midwifery Regulation. To call yourself a Midwife or practice as a Midwife, you must be registered by the Midwifery Health Disciplines Committee. Registered members provide health services listed in the Regulation.

Employment and Advancement

(section revised JANUARY 2006)

Midwives have hospital privileges in the Calgary Health Region, Peter Thompson Health Region and Westview Health Region, and negotiations are underway in other health regions. Midwifery is not currently funded by the health care system in Alberta.

In Alberta, midwives are self-employed. Until they achieve a recognized place in the health care system, no advancement opportunities are available to them.

Midwives are part of the larger National Occupational Classification 3232: Midwives and Practitioners of Natural Healing. In Alberta, most people employed in this classification work in the **Health Care and Social Assistance** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Health Care and Social Assistance industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

About 500 Albertans are employed in the Midwives and Practitioners of Natural Healing occupational group which is expected to grow 1.4 to 2.4 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover. (**Note**: Since midwives form only about 5 per cent of the larger occupational group on which this forecast is based, only one new midwife position is likely to be created every two years.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Midwives are independent practitioners. The average annual income for midwives who work full time in Alberta is about **$60,000 per year after expenses (2005 estimate).**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

Alberta Association of Midwives (AAM) website: www.albertamidwives.com

Related Occupational Profiles

Acupuncturist
Herbalist
Homeopath
Licensed Practical Nurse
Massage Therapist
Naturopathic Doctor
Registered Nurse

Related High School Subjects

Community Health; Language Arts; Physical Education; Science (Biology; and Chemistry); and Social Studies

Related Post-Secondary Fields of Study

Health Care and Medical Sciences

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Millwright

Apprenticeship and Industry Training

Produced FEBRUARY 2006

Millwrights install, maintain, repair and troubleshoot stationary industrial machinery and mechanical equipment in factories, production plants and recreational facilities.

NOC Number(s): 7311
Minimum Education: Apprenticeship Trade - Grade 11
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **O I M**

Duties

Duties vary from one position to another but, in general, millwrights:

- read diagrams and schematic drawings to determine work procedures
- operate rig equipment and dollies to move heavy machinery and parts
- fit bearings, align gears and shafts, attach motors, and connect couplings and belts (often to within a fraction of a millimetre tolerance)
- align and test equipment and make adjustments
- perform preventive and operational maintenance using procedures such as vibration analysis, and repair or replace defective parts
- trouble-shoot hydraulic, pneumatic and programmable logic controls
- may do some tack welding and fabrication as well as maintain an inventory of replacement parts.

Millwrights may do primarily construction work, plant maintenance work or a combination of both. They often work in close association with other trades people such as machinists, instrument mechanics, welders, electricians and pipefitters.

Working Conditions

Working conditions for millwrights vary from one job to another. On construction job sites, they are exposed to a variety of weather conditions. In plant maintenance, they may work indoors and outdoors. Hours of work vary: shift work and some overtime may be required. The work environment may be noisy and there may be some risk of injury when working with heavy machinery.

Millwrights may be required to lift items weighing over 25 kilograms.

Personal Characteristics

Millwrights need the following characteristics:

- physical strength and stamina
- good co-ordination and manual dexterity
- the ability to visualize a layout by looking at plans and blueprints
- the ability to comprehend and trouble-shoot mechanical systems
- the ability to get along with and sometimes supervise the work of others
- the ability to keep up to date with changing technology.

They should enjoy doing precision work.

Educational Requirements

To work in Alberta, millwrights must be ONE of the following:

- registered apprentices
- certified journeymen
- working for an employer who is satisfied that they have the skills and knowledge expected of certified

journeymen
- self-employed.

To **register** with **Alberta Apprenticeship and Industry Training**, apprentices must:
- have at least an Alberta Grade 11 education with Math 20 or 23, Applied Math 20 or Pure Math 20, English 20 or 24, and Science 20 or 24, Biology 20, Chemistry 20 or Physics 20 (or equivalent) or pass an entrance exam
- find a suitable employer who is willing to hire and train an apprentice. Most employers prefer to hire high school graduates and may select apprentices from among their current employees. Courses in applied math and physics are particularly important.

The **term of apprenticeship** is four years (four 12-month periods) that include a minimum of 1,560 hours of on-the-job training and eight weeks of technical training each year. High school students can become apprentices and gain credits toward apprenticeship training and a high school diploma at the same time through the Registered Apprenticeship Program (RAP).

Applicants who have related training or work experience may be eligible for credit or certification.

Millwright apprentices may attempt the Interprovincial Exam in the final period of their apprenticeship training and, if successful, are granted a Red Seal (which is recognized in most parts of Canada).

Technical training is arranged by Alberta Apprenticeship and Industry Training and is currently offered at:
- Keyano College in Fort McMurray
- the Northern Alberta Institute of Technology (NAIT) in Edmonton and Grande Prairie
- the Southern Alberta Institute of Technology (SAIT) in Calgary.

NAIT also offers technical training by distance delivery.

Pre-employment programs for prospective apprentices and continuing education programs for journeymen may be offered on an as needed basis by the institution(s) listed above or other schools.

Employment and Advancement

Machinists are employed by manufacturing, processing and construction companies as well as amusement parks and ski hills. Those employed in construction may experience periods of unemployment.

Millwrights can advance to supervisory or superintendent positions. Alberta certified journeyman millwrights who have the supervisory or management skills required by industry may apply for an Achievement in Business Competencies Blue Seal by contacting Alberta Apprenticeship and Industry Training.

Millwrights are part of the larger National Occupational Classification 7311: Construction Millwrights and Industrial Mechanics (Except Textile). In Alberta, over 75 per cent of people employed in this classification work in the following industries:
- **Oil and Gas Extraction**
- **Construction**
- **Wood Products Manufacturing**
- **Other Manufacturing**
- **Food and Beverage Products Manufacturing**
- **Mineral Products Manufacturing**
- **Petrochemicals, Rubber, Plastics and Chemicals Manfacturing**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:
- time of year (for seasonal jobs)
- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

About 7,950 Albertans are employed in the Construction Millwrights and Industrial Mechanics (Except Textile) occupational group which is expected to grow 1.9 to 2.9 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 150 to 240 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since millwrights form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for millwrights.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Apprentice millwrights earn at least 60 per cent of the journeyman wage rate in their place of employment in the first year, 70 per cent in the second, 80 per cent in the third and 90 per cent in the fourth. According to the Alberta Provincial Apprenticeship Committee for this trade, journeyman wage rates vary, but generally range from **$18 to $25 an hour plus benefits** (2005 estimate).

According to the **2005 Alberta Wage and Salary Survey**, Albertans employed as millwrights working part-time or full-time earned from **$22,900 to $73,600 a year.** The average salary was **$57,200 a year.**

Other Sources of Information

Alberta Apprenticeship and Industry Training website: www.tradesecrets.org

Alberta Construction Industry "Trade Up!" website: www.careersconstruction.com

Calgary Construction Association website: www.cca.cc

Related Occupational Profiles

Machinist
Plastics Processing Technician
Tool and Die Maker
Welder

Related High School Subjects

Construction Technologies; Design Studies; Electro-Technologies; Fabrication Studies; Information Processing; Language Arts; Mathematics; Mechanics; Physical Education; and Science (Physics)

Related Post-Secondary Fields of Study

Trades, Industrial and Related Training

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Mining Engineer

Produced JULY 2004

Mining engineers develop and apply methods of locating, extracting and preparing minerals to be used in manufacturing and energy industries.

NOC Number(s): 2143
Minimum Education: 4 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: I O D

Duties

In general, mining engineers may:

- conduct surveys of mineral deposits to determine the size of ore deposits and their orientation and mineral content
- prepare estimates of the costs involved in developing and operating mines
- select the most suitable means of extracting ore
- develop plans for the location and construction of mine shafts, tunnels and rooms
- ensure that proper drilling and blasting techniques are used
- select the most efficient and economical materials-handling equipment to transport ore, waste materials and mineral products
- plan underground and open-pit layouts, waste disposal dumps, haulage routes and methods, mine ventilation systems and drainage systems
- develop computer applications for use in various phases of mine operation
- co-ordinate the work of technologists, technicians and surveyors
- oversee the day-to-day operations of mines (work as pit foremen)
- supervise and train mine workers with a special emphasis on safety issues.

Mining engineers generally work in one of three fields:

- mine development
- engineering and design
- mine production and management.

Specialty areas include:

- mine operations and safety
- ventilation
- power and water supply
- communications
- equipment maintenance
- mining venture analysis
- mine reclamation and environment.

Working Conditions

Mining engineers work in offices and laboratories, and at mine sites. At mine sites, they must wear protective equipment such as safety boots, gloves, hard hats, glasses and hearing protection. They may work in enclosed spaces (e.g. underground mine shafts) or high places (e.g. near the edges of open pit mines).

Mining engineers must fly in and out to work at mines that are in remote locations.

Personal Characteristics

Mining engineers need the following characteristics:

- excellent communication and interpersonal skills
- an aptitude for mathematics and science (especially chemistry and physics)
- the ability to visualize three-dimensional objects from two-dimensional drawings
- the ability to be decisive
- the adaptability required to apply themselves to a variety of work situations.

They should enjoy being innovative, doing work that requires precision, making decisions and supervising others.

Educational Requirements

The minimum academic qualification for mining engineers is **a bachelor's degree in mining engineering.** Doctoral degrees are required for teaching and research positions.

In Alberta, the **University of Alberta** in Edmonton offers a four year bachelor's degree program and graduate degree (M.Eng., MSc, PhD) programs. The admission requirement for the bachelor's degree program is a high school diploma with an average of at least 80 per cent in:

- English 30
- Chemistry 30
- Pure Math 30
- Math 31
- Physics 30.

This is a quota program so higher marks may be required to gain admission.

The University of Alberta also offers a co-operative program in mining engineering that consists of periods of academic study alternating with periods of planned work experience in industry. This option is offered to students who have a grade point average (GPA) of 2.7/4 or better after their first year. Students in the co-operative program usually take five years to complete the requirements of the degree.

Post-secondary institutions throughout the province offer university transfer programs that allow students to apply up to two years of study toward university bachelor's degree programs. It is the student's responsibility to ensure that the courses they choose to take will be accepted for credit at the institution to which they wish to transfer.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Other Requirements

(section revised OCTOBER 2004)

Under Alberta's Engineering, Geological and Geophysical Professions Act, you must be a registered member of the Association of Professional Engineers, Geologists and Geophysicists of Alberta (APEGGA) to practice as a Professional Engineer. You do **not** have to be registered if you work under the direct supervision of a Professional Engineer and do not call yourself a Professional Engineer.

Employment and Advancement

(section revised JANUARY 2006)

Mining engineers usually work where mineral deposits are located, often near small, isolated communities. Those engaged in research, management, consulting or sales may work in urban areas, although it is recommended that they acquire field experience first. Many Canadian mining engineers are employed in other countries.

Mining engineers are employed by:

- mining, metal, non-metal, coal and oil sands extraction companies
- consulting companies
- engineering contractors
- provincial or federal governments
- equipment manufacturers.

Experienced mining engineers may set up their own consulting businesses. Teaching and research are options open to experienced mining engineers who have graduate degrees.

In Alberta, most people employed as mining engineers work in the **Professional and Technical Services** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Professional and Technical Services industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 350 Albertans are employed in the Mining Engineers occupational group which is expected to grow 1.5 to 2.5 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised SEPTEMBER 2005)

In 2003, Albertans working in the Mining Engineers occupational group earned an average salary of **$61,300 a year** (2003 Alberta Wage and Salary Survey).

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Association of Professional Engineers, Geologists and Geophysicists of Alberta (APEGGA) website: www.apegga.org

Related Occupational Profiles

Materials/Metallurgical Engineer
Petroleum Engineer

Related High School Subjects

Design Studies; Energy and Mines; Information Processing; Language Arts; Mathematics; Science (Chemistry; and Physics); and Wildlife

Related Post-Secondary Fields of Study

Engineering, Architecture and Related Studies

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Model

Produced APRIL 2005

Models enhance and promote the sale of consumer goods, new fashion designs and other business products and services.

NOC Number(s): 5232.4
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: S M I

Duties

Models display clothing and merchandise to audiences through fashion shows, photographs, videos and personal appearances. There are three basic types of modelling: runway, print and television.

- **Runway or ramp modelling** involves promoting retail and wholesale clothing lines at local fashion shows and highlighting fashion designers' newest styles and accessories at international fashion shows. On stage, fashion models show off clothes and demonstrate how they can be co-ordinated with accessories. Usually, models have to make many quick changes backstage while maintaining their poise in front of audiences.
- **Print modelling** involves posing for magazine and newspaper advertisements, catalogues, brochures, editorial features, billboards, flyers and product point-of-purchase displays. Stylists usually assist models in preparing for photo sessions (helping with hair and make-up) and clothing selection. Models in print modelling must be able to adopt the look the photographer wants.
- **Film and television modelling** usually requires some acting ability. Spokesmodels promote products and services for commercials on television, film or videos. They work with production directors who give them their lines and explain the scene.

Some models specialize in a particular type of modelling but versatility is a definite advantage when looking for work. For example, models should be able to work as both runway and print models.

Some models specialize in particular fashion categories such as plus sizes or fashions for older people.

Working Conditions

Models work in a wide variety of settings and their hours of work vary considerably. Local fashion shows may be held in tea rooms, shopping malls or banquet rooms, or on outdoor stages. Photo sessions may be in studios or on location (sometimes outside). Commercials are usually shot in studios but may be shot on location. Some commercials take up to five days to shoot.

Modelling is an extremely competitive field. Models must be ready to take calls on short notice so daily personal grooming and wardrobe organization are essential. Work tends to be seasonal, busiest in the fall and spring. Local modelling tends to be more lenient so models may work longer than in international modelling.

Personal Characteristics

Modelling is open to men, women and children of all ages. Although appearance is important, the desired look is constantly changing. The basic requirement is that models meet minimum height requirements and are well-proportioned. Specific age and physical requirements vary depending on the market and type of modelling. International models must be within a specified height range (generally five feet eight inches to five feet eleven inches for women, five feet eleven inches to six feet two inches for men) and fit sizes set by designers (generally size two to four for women, 40 Regular to 42 Tall for men). Female plus size models in the international market usually wear size 10 to 12 and must fit designer sample sizes.

Models also need the following characteristics:

- a positive attitude and the ability to persevere in a highly competitive field

- a desire to provide prompt, professional, friendly service
- grace and poise
- flexibility and the ability to adapt quickly to different requirements
- the ability to work under the pressure of deadlines
- confidence in front of the public and in promoting themselves to find work
- excellent personal grooming habits.

Models should enjoy posing and modelling, and working with people from a wide range of backgrounds.

Educational Requirements

Most successful models have not had formal training in modelling. They have been discovered by modelling agents who provide advice and promote their services.

Modelling agencies are always scouting, looking for new talent. Prospective models may submit photographs or attend agency open calls to obtain free assessments of their potential.

Before contacting modelling agencies, prospective models should learn as much as possible about each agency and how the agency recruits models. Agencies generally expect models to pay for promotional expenses such as photographs, composite cards, website promotion and courier costs. Agencies may prefer to use their own photographers for test shots.

There are **no minimum education requirements** but employers generally prefer to hire high school graduates and encourage young people to finish high school. Courses in visual arts, drama, physical education, cosmetology and financial management are recommended. At the very least, models must be able to read contracts and keep track of their bookings and expense receipts.

A number of modelling agencies offer training programs for prospective models. Before signing up for a program, aspiring models should check the reputation of the agency and the content of the training program.

Employment and Advancement

Models are self-employed. They usually pay a commission for each job their agency books for them. Commission rates vary from market to market. Models may have many agents internationally but only one agent per market.

In smaller centres, modelling is a part-time occupation for most models. They are often students as well. In larger markets, models may be busy full time. The most work is in print modelling for catalogues, newspapers, magazines, brochures and lifestyle materials. Very few models make it to the international modelling scene in New York, Los Angeles, Tokyo or Europe.

Salary

Pay rates for models **vary considerably** depending on the market and the type of modelling. In smaller centres, models may start out by doing free shows for local charities or working in exchange for products or goods. In Toronto, Montreal and Vancouver, established models may earn from **$900 to $3,000 per day (2005 estimate)**. Well established models in international markets earn more. Income earned abroad is taxed by the country in which it is earned.

Since models are self-employed, they must pay all of their business expenses (e.g. agents' commissions, travel expenses, make-up) from their earnings. Most modelling agencies in Canada charge a commission of 15 to 20 per cent.

Related Occupational Profiles

Actor
Announcer

Related High School Subjects

Cosmetology Studies; Fashion Studies; Financial Management; Fine Arts (Drama; and Visual Arts); and Physical Education

Related Post-Secondary Fields of Study

Fine Arts and Performing Arts

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Mortgage Agent

Produced FEBRUARY 2005

Mortgage agents help clients locate funding for mortgage financing and find the best rates, and provide advice regarding the best approaches to take with lenders.

NOC Number(s): 1232
Minimum Education: High school diploma
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **M S d**

Duties

Mortgage agents represent their clients and recommend the mortgage products and services that will best serve clients' needs. They may act as independent representatives of a number of financial institutions.

Duties vary but, in general, mortgage agents:

- analyse borrowers' financial needs
- research mortgage financing options to determine which ones might satisfy those needs
- explain the terms and conditions of each mortgage option (e.g. interest rate, payment schedule, lump sum payment opportunities), compare options and make recommendations
- present proposals for financing to lenders in the best way possible to obtain mortgage financing
- ensure that clients receive timely responses to mortgage applications.

Mortgage agents also spend a considerable amount of time networking with real estate agents and other business contacts to identify potential new clients and build their businesses.

Working Conditions

Working conditions for mortgage agents vary. They may work in a typical office environment or work from their homes, and spend a lot of time meeting people. Evening and weekend work is required.

Personal Characteristics

Mortgage agents and brokers need the following characteristics:

- integrity and honesty
- good interpersonal skills
- strong organizational skills
- accuracy and precision in dealing with figures
- good oral and written communication skills.

They should enjoy taking a methodical approach to compiling information for mortgage documents, talking to people and evaluating mortgage applications.

Educational Requirements

In Alberta, mortgage agents must have a high school diploma and successfully complete the Mortgage Agents Program.

The Alberta Mortgage Brokers Association's 75 hour Mortgage Agents Program may be taken by independent study through the **Alberta Real Estate Association (AREA)** or by classroom instruction. Classroom instruction is offered by **Mount Royal College** in Calgary and the **Real Estate Training Institute** in Edmonton. The entrance requirement is a high school diploma. Computer skills are a definite asset.

The **Canadian Institute of Mortgage Brokers and Lenders (CIMBL)** offers a voluntary designation, Accredited Mortgage Professional (AMP), to its members who have:

1. completed a recognized program such as the AREA program, successfully challenged a CIMBL exam or completed CIMBL's Ethical Practice seminar.
2. completed CIMBL's Ethical Practice seminar.
3. at least two years of experience in the mortgage industry as a broker, lender or insurer.

Other Requirements

In Alberta, mortgage agents and brokers must be licensed by the **Real Estate Council of Alberta (RECA).** Applicants must pass a provincial exam and satisfy continuing education requirements.

Employment and Advancement

(section revised JANUARY 2006)

Mortgage agents may be employed by or associated with private mortgage brokerage firms or real estate offices.

Licensing as a mortgage broker requires two years of experience as a mortgage agent. Further advancement generally takes the form of building a larger client base.

Mortgage agents and brokers are part of the larger National Occupational Classification 1232: Loan Officers. Over 75 per cent of people employed in this classification work in the **Finance, Insurance and Real Estate** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Finance, Insurance and Real Estate industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 3,550 Albertans are employed in the Loan Officers occupational group which is expected to grow 1.7 to 2.7 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 60 to 100 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since mortgage agents and brokers form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for mortgage agents and brokers. However, mortgage agent is a growing component of this classification.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised SEPTEMBER 2005)

Mortgage agents' incomes vary considerably from one month to another and from one agent to another. For each mortgage they sell, they receive a percentage of a commission paid by the lender.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Loan Officers occupational group working part-time or full-time earned from **$19,600 to $60,600 a year.** The average salary was **$40,300 a year.**

Other Sources of Information

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Mortgage Brokers Association (AMBA) website: www.amba.ca

Canadian Institute of Mortgage Brokers and Lenders (CIMBL) website: www.cimbl.ca

Real Estate Council of Alberta (RECA) website: www.reca.ab.ca

Related Occupational Profiles

Banking/Investment Manager
Credit/Loans Manager
Insurance Agent/Broker
Real Estate Agent

Related High School Subjects

Financial Management; Language Arts; Management and Marketing; and Mathematics

Related Post-Secondary Fields of Study

Business, Management and Administrative Studies

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Motorcycle Mechanic

Produced FEBRUARY 2006

Motorcycle mechanics assemble, maintain, repair and restore motorcycles and other multi-wheeled lightweight all-terrain vehicles that do not have lateral seating and are equipped with a handle bar on which the vehicle's controls are located.

NOC Number(s): 7334
Minimum Education: Apprenticeship Trade - Grade 9
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: O M i

Duties

Duties vary from one position to another but, in general, motorcycle mechanics:

- rebuild or replace parts
- diagnose problems and locate failures with the electrical system, engine, power train, suspension or frame by inspecting the vehicle, listening to it operate and using testing equipment
- dismantle, adjust and repair or replace mechanical and electrical system parts and components
- perform routine maintenance such as cleaning and adjusting the carburetor, adjusting the clutch, brakes and drive chain, and replacing worn parts
- discuss complaints with customers or the service manager
- operate machine tools, boring bar mills and lathes.

Motorcycle mechanics who work for motorcycle dealerships also assemble new machines.

Working Conditions

Motorcycle mechanics usually work indoors in shops where it is sometimes noisy. There is some risk of injury when working near exhaust fumes.

Motorcycle mechanics may be required to lift items weighing over 25 kilograms.

Personal Characteristics

Motorcycle mechanics need the following characteristics:

- mechanical interest and aptitude
- good customer service skills
- the ability to work long hours in the busy season
- the ability to keep up to date with changing technology.

They should enjoy doing precision work and solving problems.

Educational Requirements

To work in Alberta, motorcycle mechanics must be registered apprentices or certified journeymen.

To **register** with **Alberta Apprenticeship and Industry Training**, apprentices must:

- have at least an Alberta high school transcript with Applied Math 20, English 20 or 23 and Science 20 (or equivalent) or pass an entrance exam
- find a suitable employer who is willing to hire and train an apprentice. Most employers prefer to hire high school graduates and may select apprentices from among their current employees.

The **term of apprenticeship** is four years (four 12-month periods) that include a minimum of 1,360 hours of on-the-job training and eight weeks of technical training in the first and second year and a minimum of 1,420 hours of on-the-job training and six weeks of technical training in the third and fourth. High school students can become apprentices and gain credits toward apprenticeship training and a high school diploma at the same time through the Registered Apprenticeship Program (RAP).

Applicants who have related training or work experience may be eligible for credit or certification.

Motorcycle mechanic apprentices may attempt the Interprovincial Exam in the final period of their apprenticeship training and, if successful, are granted a Red Seal (which is recognized in most parts of Canada).

Technical training is arranged by Alberta Apprenticeship and Industry Training and is currently offered by the Northern Alberta Institute of Technology (NAIT) in Fairview.

Outside the apprenticeship program, the **Northern Alberta Institute of Technology** offers a 15-week Harley-Davidson Technician certificate of achievement program in Fairview. The entrance requirement is English 10 or a Grade 11 English and Math 10 or a Grade 11 math.

Pre-employment programs for prospective apprentices and continuing education programs for journeymen may be offered on an as needed basis by the institution(s) listed above or other schools.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

Motorcycle mechanics are employed by motorcycle dealerships or repair shops, or are self-employed.

In colder climates such as Alberta's, motorcycle repair work is seasonal. Motorcycle mechanics are very busy doing diagnostic and repair work in the warmer months and may encourage customers to have preventative maintenance work done in the winter. However, due to the seasonal nature of the work, motorcycle mechanics must be skilled in other types of repair work (e.g. repairing snowmobiles) to remain employed year-round.

Experienced motorcycle mechanics may advance to supervisory positions or set up their own businesses. Alberta certified journeyman motorcycle mechanics who have the supervisory or management skills required by industry may apply for an Achievement in Business Competencies Blue Seal by contacting Alberta Apprenticeship and Industry Training.

Motorcycle mechanics are part of the larger National Occupational Classification 7334: Motorcycle and Other Related Mechanics. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Retail Trade**
- **Repair, Maintenance, Personal and Other Services**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- time of year (see duties)
- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

About 400 Albertans are employed in the Motorcycle and Other Related Mechanics occupational group which is expected to grow 1.2 to 2.2 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover. (**Note**: Since motorcycle mechanics form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for motorcycle mechanics.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Apprentice motorcycle mechanics earn at least 55 per cent of the journeyman wage rate in their place of employment in the first year, 65 per cent in the second, 75 per cent in the third and 90 per cent in the fourth. According to the Alberta Provincial Apprenticeship Committee for this trade, journeyman wage rates vary, but generally range from **$15 to $28 an hour plus benefits** (2005 estimate).

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Motorcycle and Other Related Mechanics occupational group working part-time or full-time earned from **$16,500 to $60,700 a year.** The average salary was **$38,400 a year.**

Other Sources of Information

Alberta Apprenticeship and Industry Training website: www.tradesecrets.org

Post-secondary institution calendars or websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Related Occupational Profiles

Appliance Service Technician
Electrical Motor Systems Technician
Outdoor Power Equipment Technician

Related High School Subjects

Electro-Technologies; Fabrication Studies; Mechanics; and Physical Education

Related Post-Secondary Fields of Study

Trades, Industrial and Related Training

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Municipal Administrator

Produced JUNE 2003

Municipal administrators administer the affairs of municipalities including cities, towns, villages, summer villages, municipal districts and specialized municipalities.

NOC Number(s): 0414
Minimum Education: 2 years post-secondary education/training
Employment Outlook: Employment turnover plus below average occupational growth in Alberta
Interests: **D I M**

Duties

Municipal administrators are the administrative heads of municipalities. In small or sparsely populated municipalities, they may work part-time. In larger municipalities, administrators may have a sizable staff to assist them in administering the affairs of the municipality.

In general, municipal administrators are responsible for:

- the day-to-day operations of the municipality
- promoting and maintaining good public relations
- safe-keeping records such as minutes, by-laws and accounts
- recommending policies and actions to the municipal council
- providing input into strategic planning
- carrying out the council's directives and policies
- directing the general administrative functions of the municipality including supervising office staff and purchasing procedures
- preparing budgets and managing finances
- preparing by-laws approved by council
- ensuring that by-laws are enforced
- conducting elections.

In many larger municipalities, the administrator's job title is City Manager or Commissioner. In such cases, responsibilities are often delegated to one or more individuals supervised by the municipal administrator.

Municipal administrators attend and participate in all meetings of the municipal council and council committees. However, they do not have the right to vote unless appointed to a committee.

Working Conditions

Municipal administrators work in an office environment. They may work longer than the usual 40-hour week and are often required to attend evening meetings.

Personal Characteristics

Municipal administrators must be able to:

- provide strong leadership and direction
- work in a team environment as well as work independently
- communicate their ideas effectively, both in person and in writing
- deal effectively with stress.

They should enjoy co-ordinating information and making decisions, negotiating with people and finding innovative solutions to problems, and administering and controlling budgets.

Educational Requirements

(section revised APRIL 2005)

Municipal administrators come from a variety of academic backgrounds, including:

- public administration
- business administration
- engineering
- accounting
- urban planning
- recreation administration.

In addition to a strong academic background, municipal administrators are generally required to have some management experience.

Prospective municipal administrators should take post-secondary education related to local government administration or start in junior administrative positions in medium-sized municipalities where they will get a wide range of exposure to municipal affairs. Many administrators have begun their careers working in business firms, banks or retail stores.

One year certificate and two year diploma programs in business administration are offered by post-secondary education institutions throughout Alberta. In general, the entrance requirement for these programs is a high school diploma or equivalent with specific course requirements.

Three year and four year degree programs in business, commerce and management are also offered by universities and colleges throughout the province. In general, the entrance requirement for such programs is completion of one or two years of applicable university study, or a high school diploma with an average of 65 to 80 per cent, as specified by each institution, in English 30 and four other appropriate grade 12 subjects (specific course requirements vary from program to program).

Athabasca University offers a one year University Certificate in Public Administration program. Applicants must be at least 16 years of age.

The Faculty of Extension at the **University of Alberta** in Edmonton offers an eight course Local Government Certificate Program and an online National Advanced Certificate in Local Authority Administration program. Applicants for the Local Government Certificate program must have a high school diploma or be at least 21 years of age to apply as a mature student.

Continuing education programs are often offered on an as needed basis.

For more information about programs and mature student admission policies, please check post-secondary calendars or websites.

Other Requirements

(section revised OCTOBER 2004)

Certified Local Government Manager is a protected title under Alberta's Professional and Occupational Associations Registration Act. This means that to call yourself a Certified Local Government Manager, you must be a registered member of the Society of Local Government Managers of Alberta (SLGMA). You do **not** have to be registered if you do not call yourself a Certified Local Government Manager.

Employment and Advancement

(section revised JANUARY 2006)

Municipal administrators should have work experience related to:

- management
- public relations
- finance
- administration
- law.

Those who are willing to move from one municipality to another over a number of years may acquire more responsibility and experience with each move, and have an advantage when seeking employment as municipal administrators.

Municipal administrators are part of the larger National Occupational Classification 0414: Other Managers in Public Administration. In Alberta, most people employed in this classification work in the **Public Administration** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Public Administration industry)
- **location** in Alberta (employment prospects are best for administrators willing to work in municipalities that are not located close to an urban centre)
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 700 Albertans are employed in the Other Managers in Public Administration occupational group which is expected to grow 0.5 to 1.5 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover. (**Note**: Since municipal administrators form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for municipal administrators.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised SEPTEMBER 2005)

Salaries for municipal administrators vary greatly, depending on the size and operations of the municipality.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Managers in Public Administration occupational group working part-time or full-time earned from **$25,500 to $136,400 a year.** The average salary was **$98,600 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Rural Municipal Administrator's Association website: www.aamdc.com/Policy/ARMAA/armaa_default.htm

Local Government Administration Association of Alberta website: www.lgaa.ab.ca

Society of Local Government Managers of Alberta website: www.clgm.net

Related Occupational Profiles

Health Service Administrator
School Business Official

Related High School Subjects

Enterprise and Innovation; Financial Management; Language Arts; Legal Studies; Logistics; Management and Marketing; Mathematics; Science; and Social Studies

Related Post-Secondary Fields of Study

Business, Management and Administrative Studies; Engineering, Architecture and Related Studies; and Physical Education and Recreation

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For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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OCC info Alberta Occupational Profiles

Alberta Human Resources and Employment

Municipal Recycling Truck Driver

Produced JUNE 2003

Municipal recycling truck drivers collect, sort and transport recyclable waste materials such as glass, plastic, metal and paper.

NOC Number(s): 7411.2
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **M O d**

Duties

Municipal recycling truck drivers pick up special types of recyclable materials along designated routes. They may operate regular trucks or specially designed trucks. Specially designed trucks may have dual-drive cabs or automated side loaders.

Specific duties vary from one employer to another but, in general, municipal recycling truck drivers:

- conduct vehicle inspections before they start driving to ensure that their vehicles are in safe driving condition
- follow a regular pick-up route or route card instructions
- load blue bags into the collection unit or sort materials in collection boxes into truck compartments
- deal with the public
- communicate with dispatchers concerning delays, unsafe sites, accidents, equipment breakdowns and other maintenance problems
- drive back to recycling depots or warehouses to dump truck contents
- refuel trucks at depots.

In some municipalities, truck operators collect both refuse and recyclable materials (for more information, see the Refuse Truck Driver occupational profile).

Working Conditions

Municipal recycling truck drivers usually work shifts. They may be required to work split shifts, afternoons and weekends.

Drivers work in all types of weather, around waste materials which may be dirty or smelly. They may be required to routinely lift items weighing up to 25 kilograms.

Personal Characteristics

Municipal recycling truck drivers need the following characteristics:

- the ability to work steadily and quickly all day long
- the ability to follow directions
- the ability to work independently.

They should enjoy routine, repetitive work and driving.

Educational Requirements

There are no formal education requirements for municipal recycling truck drivers. However, a high school diploma may be required for advancement.

Employers require job applicants to have a clean driving record and, depending on the type of trucks used, a valid Alberta Class 5 Operator's License with air brake certification or a Class 3 with air brakes.

Municipal recycling truck drivers are **trained on the job**.

Employment and Advancement

(section revised JANUARY 2006)

Recycling truck drivers may be employed by:

- municipalities (cities or towns)
- non-profit recycling organizations
- privately owned recycling collection services.

Experienced drivers may move into other driving occupations (for more information, see the Bus Driver and Truck Driver occupational profiles). Advancement opportunities generally require at least a high school diploma.

Municipal recycling truck drivers are part of the larger National Occupational Classification 7411: Truck Drivers. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Transportation and Warehousing**
- **Construction**
- **Oil and Gas Extraction**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 40,050 Albertans are employed in the Truck Drivers occupational group which is expected to grow 1.5 to 2.5 per cent each year from 2005 to 2010 in Alberta. It is forecasted that over 600 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since municipal recycling truck drivers form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for municipal recycling truck drivers.)

Salary

(section revised OCTOBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Truck Drivers occupational group working part-time or full-time earned from **$15,200 to $109,100 a year.** The average salary was **$49,200 a year.**

Other Sources of Information

Municipal Recycling Waste Handler
Refuse Truck Driver
Truck Driver

Related Occupational Profiles

Physical Education

Related Post-Secondary Fields of Study

Driver Training

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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OCC info Alberta Occupational Profiles

Alberta Human Resources and Employment

Municipal Recycling Waste Handler

Produced JUNE 2003

Municipal recycling waste handlers sort recyclable domestic and commercial waste materials such as glass, plastic, metal and paper.

NOC Number(s): 9619
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus below average occupational growth in Alberta
Interests: **M O i**

Duties

Municipal recycling waste handlers work at a depot or warehouse where they sort bulk loads of waste paper, glass materials or other recyclable waste. Their duties vary depending on the employer but, in general, they:

- verify that waste material is of a specified type and grade and is free of contaminants
- load waste materials onto conveyor belts or into bulk loads which can be inspected
- operate and regulate the flow of paper into shredding/baling machines
- operate fork-lifts to move bales of shredded or compressed materials into storage areas or to load waste materials onto trucks or trailers
- assist the general public in unloading recyclable material
- operate hydraulic lift jacks to move bales or loads of bulk paper.

Workers in municipal recycling depots such as bottle return operations may also:

- direct and assist people unloading recyclable material
- calculate payments and pay customers for returned materials.

Working Conditions

Municipal recycling waste handlers often work shifts. They are on their feet most of their working hours, and may be required to lift items weighing up to 25 kilograms. They must observe safety precautions such as wearing hard hats, gloves, safety shoes and safety glasses, and not wear loose clothing when working near conveyor belts.

The working environment can be dusty, dirty and sometimes smelly. Some materials may be sorted outside due to storage constraints.

Personal Characteristics

Municipal recycling waste handlers need the following characteristics:

- the ability to work steadily and quickly for an entire shift
- the ability to perform routine, repetitive tasks but still remain alert
- the ability to work independently.

Those who deal with the public must also be able to deal pleasantly and courteously with a wide variety of people.

Municipal recycling waste handlers should enjoy taking a methodical approach to their work and handling materials.

Educational Requirements

There are no formal education requirements for recycling waste handlers. However, a high school diploma is a definite asset for advancement.

Municipal recycling waste handlers are **trained on the job**. Those who operate bob cats and fork lifts must qualify for the required certification.

Employment and Advancement

(section revised JANUARY 2006)

Recycling waste handlers may work for:

- municipalities (cities and towns)
- non-profit recycling organizations
- privately owned recycling collection services.

In large operations, experienced recycling waste handlers may advance to supervisory positions.

Municipal recycling waste handlers are part of the larger National Occupational Classification 9619: Other Labourers in Processing, Manufacturing and Utilities. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Other Manufacturing**
- **Management, Administrative and Other Support Services**
- **Metals, Metal Fabrication and Machinery Manufacturing**
- **Minerals Products Manufacturing**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 4,450 Albertans are employed in the Other Labourers in Processing, Manufacturing and Utilities occupational group which is expected to grow up to 1.0 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover. (**Note**: Since municipal recycling waste handlers form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for municipal recycling waste handlers.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Other Labourers in Processing, Manufacturing and Utilities occupational group working part-time or full-time earned from **$12,100 to $73,700 a year.** The average salary was **$26,600 a year.** Salary ranges for municipal recycling waste handlers are generally considerably lower.

Related Occupational Profiles

Municipal Recycling Truck Driver
Refuse Collector

Related High School Subjects

Physical Education

Related Post-Secondary Fields of Study

Trades, Industrial and Related Training

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Museum Technician

Produced OCTOBER 2003

Museum technicians assist curators, conservators and other museum staff with functions such as researching, developing, managing and conserving museum collections, setting up exhibits and delivering public programs.

NOC Number(s): 5212.6
Minimum Education: 2 years post-secondary education/training
Employment Outlook: Employment turnover plus below average occupational growth in Alberta
Interests: **O M i**

Duties

Museum technicians are part of a team of museum personnel concerned with the safe and suitable display and storage of artifacts (products of human hands) and/or specimens (natural history items). Their duties and responsibilities vary depending on the type of museum collection. Under the supervision and direction of museum curators and conservators, they may:

- assist in collections management activities such as collecting and cataloguing, preparing condition reports, preparing and storing items, records management and preservation activities
- assist with cleaning, repair, preservation and restoration
- help researchers prepare information about collections, programs and special events, and conduct tours for students and special interest groups
- help develop and manage storage areas and monitor environmental conditions (e.g. humidity levels)
- assist with exhibit design and ensure that necessary materials are available for assembling and maintaining exhibits
- build display cases, packing cases and scale models of exhibits
- pack, unpack, move and install items for display
- ensure touring exhibits are properly and safely packed, transported and displayed, report on their status and condition, and identify and correct any problems with exhibit set-up
- perform seasonal field work at archaeological or historic sites which may involve inspecting and identifying artifacts or specimens, doing an environmental assessment, taking inventory and recording observations
- supervise and work with seasonal staff and volunteers.

Working Conditions

Museum technicians work primarily indoors in offices, storage areas and exhibition galleries, but may sometimes work outdoors at archaeological or historic sites. They may be required to lift items weighing over 25 kilograms.

Personal Characteristics

Museum technicians need the following characteristics:

- an interest in art, natural history or human history
- good oral and written communication skills
- good interpersonal and team building skills
- mechanical aptitude
- the ability to multi-task.

They should enjoy doing precise, detailed work, taking a methodical approach to their work and solving problems.

Educational Requirements

In Alberta, there are no standard education requirements for museum technicians but employers generally prefer to hire applicants who have **a related bachelor's degree, or a diploma or certificate in museum studies**. Computer skills and related volunteer or paid experience (e.g. in the care and handling of collections, records management, research, exhibit development) are definite assets. Depending on the type of museum, skills in related fields such as carpentry, electronics, mechanical engineering, painting or sewing may also be valuable.

Museums Alberta offers a Certificate in Museums Studies program that includes eight core courses.

Employment and Advancement

(section revised JANUARY 2006)

Museum technicians work for:

- federal government departments and agencies (e.g. National Museums of Canada)
- provincial government departments (e.g. Alberta Community Development)
- municipal and local history museums
- galleries
- science centres
- natural and historic park museums, zoos, botanical gardens and interpretive centres
- historical societies
- privately-funded historic and cultural agencies
- universities.

Without further education, advancement opportunities for museum technicians are limited.

Museum technicians are part of the larger National Occupational Classification 5212: Technical Occupations Related to Museums and Art Galleries. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Information, Culture and Recreation**
- **Public Administration**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 400 Albertans are employed in the Technical Occupations Related to Museums and Art Galleries occupational group which is expected to grow 0.7 to 1.7 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover. (**Note**: Since museum technicians form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for museum technicians.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Technical Occupations Related to Museums and Art Galleries occupational group working part-time or full-time earned from **$14,700 to $75,800 a year.** The average salary was **$32,200 a year.**

Other Sources of Information

Museums Alberta website: www.museumsalberta.ab.ca

Related Occupational Profiles

Anthropologist
Archaeologist
Curator
Exhibit Designer
Heritage Interpreter

Related High School Subjects

Communication Technology; Construction Technologies; Fine Arts (Visual Arts); Information Processing; Language Arts; Physical Education; Social Studies; and Tourism Studies

Related Post-Secondary Fields of Study

Clerical and Administrative Support; Education and Library Studies; Fine Arts and Performing Arts; and Social Sciences, Law and Religious Studies

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For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Music Copyist

Produced MAY 2003

Music copyists prepare individual parts (instrumental and vocal) from musical scores. They may copy all of the music on manuscript paper exactly as written by the composer or arranger, or input the correct information into a music copying computer program.

NOC Number(s): 5132.3
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **D I m**

Duties

Music copyists produce professional-looking handwritten or computer-generated musical scores for each musician to study and use during rehearsals and performances. In general, music copyists copy musical parts to produce separate scores for different parts and correct errors (e.g. incorrect notes or rests).

Music copyists do not always rewrite the complete score. Songwriters may hire copyists to write out a "lead sheet" containing the melody line, chord symbols and words to the song or to write out specific instrumental parts from a score. Copyists may also write out copies of specific instrumental parts from orchestral scores (e.g. percussion or brass music only).

Copyists generally follow a copyists' guide manual, but some arrangers require copyists to adjust to their personal method of copying.

The computer hardware and software required to produce music scores is expensive. Hand copying is often faster and therefore more useful for meeting unexpected deadlines.

Working Conditions

Music copyists generally work in their own homes or at the homes of arrangers and composers. Last minute requests for music copying are common, so copyists often work under pressure to meet deadlines. They usually work alone but, on large music projects (e.g. film scores), several copyists may work together.

Personal Characteristics

Music copyists need the following characteristics:

- the ability to produce consistently neat, clear and accurate work
- the ability to work quickly and meet deadlines.

They should enjoy using tools and computers to perform tasks requiring precision, and working independently.

Employment and Advancement

There are **no formal education or training requirements** for music copyists. However, to be successful, they need:

- a good knowledge of music notation and jazz and orchestral scores
- an understanding of both traditional and contemporary music
- a working knowledge of current software programs for score and part generation
- some familiarity with the qualities and limitations of instruments and voices.

Many copyists have taken courses in orchestration, music theory, harmony, composition and notation. Some music copyists have formal training in music from a music conservatory, college or university.

Studying samples of copied music may provide useful experience. Courses in calligraphy may be helpful for developing professional handwriting skills.

Educational Requirements

(section revised JANUARY 2005)

Music copying is basically a freelance occupation. Most copyists in Alberta are hired by composers and arrangers to score their music. In larger music production centres such as Montreal and Toronto, copyists may be hired by:

- music publishers
- television and recording studios
- performers
- composers and arrangers
- songwriters (for lead sheets)
- music directors.

On occasion, copyists working for music publishing companies may advance to music editor positions.

Music copyists are part of the larger National Occupational Classification 5132: Conductors, Composers and Arrangers. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Information, Culture and Recreation**
- **Repair, Maintenance, Personal and Other Services**.

In Alberta, music copying is a part-time occupation that generates extra income for people who work primarily in other music-related fields such as teaching, arranging or performing. There is a very limited amount of available work in this area.

Salary

(section revised OCTOBER 2005)

Professional music copyists may be members of the American Federation of Musicians of the United States and Canada which establishes minimum wage scales for copying in various categories. However, copyists often negotiate "per page" fees above the union minimum. Rates vary depending on the complexity of the work, whether computer copying is involved or working past midnight is required.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Conductors, Composers and Arrangers occupational group working part-time or full-time earned an average salary of **$22,900 a year**.

Other Sources of Information

Cultural Human Resources Council website: www.culturalhrc.ca

Related Occupational Profiles

Choral Conductor
Composer
Instrumental Musician
Orchestra/Band Conductor
Orchestrator/Arranger
Songwriter

Related High School Subjects

Fine Arts (Music); and Information Processing

Related Post-Secondary Fields of Study

Fine Arts and Performing Arts

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Musical Instrument Repair Technician

Produced MAY 2003

Musical instrument repair technicians, including piano technicians, pipe organ repairers, band instrument repair technicians and violin repairers, maintain and repair musical instruments.

NOC Number(s): 7445
Minimum Education: High school diploma
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **O M i**

Duties

Piano technicians make up the majority of musical instrument repair technicians. In general, they:

- diagnose problems with faulty instruments (which may involve partially dismantling them for inspection)
- make mechanical and structural repairs
- adjust the touch and recondition the action
- rebuild pianos, including repairing cracks in the sound board and restringing
- tune pianos by adjusting the strings.

A piano problem may have its source in any of the many wooden, steel, iron, ivory or felt parts. Some pianos have humidity systems to help them stay in tune and protect them from extreme humidity conditions.

Pipe organ repairers work on pipe organs in churches and concert halls. Pipe organs create sound by forcing air through flue pipes or reed pipes ranging in size from 17 centimetres to ten meters in length. In general, pipe-organ repairers:

- tune pipes
- perform regular maintenance tasks such as cleaning the pipes
- locate and correct problems in organ components such as slides, valves, keys and air channels or the electric wind-generating equipment.

Pipe organ repairers may also install new pipe organs. The installation process may take weeks or months, and require the installer to work in cramped locations.

Although pianos, pipe organs, electronic organs and synthesizers all have keyboards and look somewhat alike, their mechanisms are quite different. Therefore, few repairers are qualified to work on more than one type of instrument. Electronic instruments are generally repaired by technicians who are familiar with electronic components.

Band instrument repair technicians repair brass and woodwind instruments, and some percussion instruments. In general, they:

- solder broken joints and parts
- remove dents in brass
- buff and re-lacquer dull and tarnished brass
- align valves and slides
- replace missing parts.

Wind instrument repair technicians:

- replace pads, corks, felts and springs
- align pads and keys
- restore mechanical action to parts
- repair cracks in wood instruments
- remove dents in sax and flute bodies and keys
- solder posts and parts.

Senior technicians may make custom repairs and modifications, and restore instruments to better than new condition.

Violin repairers build and restore stringed instruments such as violins, violas, cellos and double basses. In general, they:

- make minor repairs such as repairing or replacing worn parts or strings
- restore or reconstruct cracked or broken instruments.

Restoration is often more challenging than building a new instrument. The challenge is to ensure that, upon completion of the restoration, no evidence of repair remains.

Depending on the size of the shop or repair centre, music instrument repairers may have additional responsibilities such as customer service or general cleaning duties.

Working Conditions

Musical instrument repair technicians work in shops, factories, music stores, homes and public buildings such as schools, churches and concert halls. Those who work in factories work a standard 40 hour work week; those who are self-employed set their own hours and may work evenings and weekends for the convenience of their customers. Band instrument repair technicians often work long hours during the summer months to repair schools instruments before September, and take time off after December.

Lifting up to 10 kilograms is routinely required. Some lifting up to 25 kg may be required.

Personal Characteristics

Musical instrument repair technicians need the following characteristics:

- good manual dexterity and physical stamina
- keen hearing
- mechanical ability
- the ability to make delicate adjustments
- patience and perseverance.

Those working in shops must be able to get along well with others because they often work in close quarters for long periods of time.

Musical instrument repair technicians should enjoy using tools and equipment to perform tasks requiring precision, taking a methodical approach to their work, and finding unique solutions to problems.

Educational Requirements

Depending on the type of instrument, most musical instrument repair technicians learn their craft by **working with experienced repairers for several years or taking related training programs.** Employers generally prefer to hire applicants who have Grade 12 or equivalent education. Courses in mathematics, physics, industrial arts and music are a definite asset. Bookkeeping courses are helpful for those who want to eventually be self-employed.

In Alberta, **Keyano College** in Fort McMurray offers a two year Music Instrument Repair diploma program for brass and woodwind instruments. The entrance requirement is a high school diploma with Grade 12 English or satisfactory completion of a college entrance test or equivalent.

To become a Registered Piano Technician with the **Canadian Association of Piano Technicians**, applicants must successfully complete a three-part exam that includes bench work, tuning and a written exam.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

(section revised JANUARY 2005)

Aspiring musical instrument repair technicians may find it difficult to obtain a training position. Manufacturers and dealers with service departments have limited numbers of training positions, and private repair technicians are often too busy to train someone new or not busy enough to warrant hiring someone. Most employers prefer to hire those who have previous related experience or formal training in the field.

Most piano technicians work primarily for private owners. Advancement may take the form of specializing in concert work or in rebuilding pianos.

Opening a musical instrument tuning and repair business is relatively inexpensive, but the market is very competitive. Maintaining another source of income until the business is well established is advisable.

Starting a brass and woodwind repair business requires a sizable investment in specialized tools and supplies, and mistakes can be very costly. It is strongly recommended that inexperienced brass and wood instrument repair technicians gain experience in larger full service shops before attempting to set up their own businesses.

Experienced repair technicians employed in factories, large music stores or repair shops may advance to supervisory positions.

Musical instrument repair technicians are part of the larger National Occupational Classification 7445: Other Repairers and Servicers. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Retail Trade**
- **Repair, Maintenance, Personal and Other Services**
- **Wholesale Trade**.

Salary

Inexperienced trainees may be paid **minimum wage** (or work as a volunteer in return for training) and their wages often remain low until they are qualified to work independently.

The earnings of independent repair technicians gradually increase as their businesses grow, and level off when they have as much work as they can handle. Their fees vary greatly depending on their area of expertise, reputation and business skill.

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Canadian Association of Piano Technicians website: www.pianocanada.ca

Related Occupational Profiles

Craftsperson

Related High School Subjects

Construction Technologies; Electro-Technologies; Fabrication Studies; Fine Arts (Music); Language Arts; Management and Marketing; Physical Education; and Science (Physics)

Related Post-Secondary Fields of Study

Trades, Industrial and Related Training

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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OCC*info* Alberta Occupational Profiles

Alberta Human Resources and Employment

Nail Technician

Produced DECEMBER 2003

Nail technicians clean, shape, extend and polish clients' fingernails and toenails.

NOC Number(s): 6482.4
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus below average occupational growth in Alberta
Interests: **M S O**

Duties

Duties vary from one position to another but, in general, nail technicians:

- remove old polish
- clean and shape nails to make them more attractive
- soften cuticles and push them back
- treat the ends of nails to make them more resilient
- whiten nail tips with a nail white pencil
- apply artificial nails
- extend natural nails with acrylic powder and liquid
- wrap nails to mend and strengthen them
- apply nail tips and ridge filler or apply a gel and harden it under ultraviolet light
- buff nails or apply polish
- decorate clients' nails with designs or attach ornaments to nails
- remove dead skin from hands or feet and apply warm parrafin wax treatments
- advise clients about colours and nail care products
- promote and sell nail care products
- sanitize their tools and keep their work area clean
- maintain an inventory of supplies.

They may also:

- teach clients how to care for their nails and apply polish
- book client appointments and accept payments
- keep records of the services provided.

Working Conditions

Most nail technicians work in beauty salons and are seated for most of their working hours. They may work full-time or part-time, but Saturday and evening shifts are generally required.

Personal Characteristics

Nail technicians need the following characteristics:

- an outgoing, friendly personality
- a good sense of colour
- patience and the ability to deal tactfully with difficult clients
- a well-groomed appearance.

They should enjoy:

- taking a methodical approach to compiling information
- serving and assisting people
- using specialized products and techniques.

Educational Requirements

(section revised FEBRUARY 2005)

There are **no standard education requirements** for nail technicians. However, a high school diploma and related training are definite assets when seeking employment.

Since the Hairstylist Apprenticeship Program includes training in manicure and pedicure, many hairstylists acquire related knowledge and skills through work experience (for more information, see the Hairstylist occupational profile). However, additional training may be required for hairstylists who wish to specialize in nail care.

People interested in entering this occupation should discuss their training options with practicing nail technicians and potential employers. On-the-job training opportunities may be difficult to find because most beauty salons employ only one nail technician and shops specializing in this field are usually small operations.

In Alberta, the following private vocational schools offer Nail Artistry/Technician programs:

- **Alberta Academy of Aesthetics** in Edmonton
- **Beauty Tech Esthetic School** in Edmonton
- **International Academy of Esthetics** in Sherwood Park
- **Marvel College** in Calgary, Edmonton and Red Deer
- **Nails Academy** in Calgary
- **Trend College** in Edmonton
- **Zeneba Academy of Esthetics** in Calgary.

For information about esthetics programs that may include nail artistry components, see the Esthetician occupational profile.

For specific admission requirements and information about mature student admission policies, please check institution calendars or websites.

Employment and Advancement

(section revised JANUARY 2006)

Nail technicians are employed, or work on a contract basis, in beauty salons.

Without additional training, advancement opportunities are limited. However, some nail technicians set up their own shops.

Nail technicians are part of the larger National Occupational Classification 6482: Estheticians, Electrologists and Related Occupations. In Alberta, over 75 per cent of people employed in this classification work in the **Repair, Maintenance, Personal and Other Services** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Repair, Maintenance, Personal and Other Services industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 3,350 Albertans are employed in the Estheticians, Electrologists and Related Occupations group which is expected to grow 0.5 to 1.5 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 10 to 60 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since nail technicians form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for nail technicians.) Employment prospects are best for nail technicians who have other related skills as well (for more information, see the Esthetician and Hairstylist occupational profiles).

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Earnings for nail technicians vary considerably depending on the location, the services offered and the technician's reputation. Rates are usually set for each type of service so earnings vary from day to day, depending on the type and number of services performed.

Nail technicians may rent space in a beauty salon and keep their earnings separate from those of the salon, or they may be employed by the salon and paid a basic salary plus commission. Those who are self-employed must pay overhead costs (rent, supplies, etc.) from their earnings.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Estheticians, Electrologists and Related Occupations group working part-time or full-time earned from **$11,100 to $45,500 a year.** The average salary was **$19,600 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Related Occupational Profiles

Cosmetician
Electrologist
Esthetician
Hairstylist

Related High School Subjects

Cosmetology Studies; and Language Arts

Related Post-Secondary Fields of Study

Personal and Food Services

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Nanny

Produced JUNE 2003

Nannies care for children in private homes, providing for their social, emotional, intellectual and physical development.

NOC Number(s): 6474.2
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **S M d**

Duties

Nannies' duties vary depending on the household and the number and age of children but, in general, they:

- supervise and guide children
- bath and dress infants and help children dress and wash
- sterilize bottles, prepare formulas and change diapers for infants
- plan and prepare nutritious meals for the children or whole family
- keep children's rooms and the household clean and tidy
- do the childrens' laundry and ironing
- organize age-appropriate play activities
- take children to school and appointments
- supervise study periods and assist with homework
- support the emotional development and well-being of the children in their care
- discipline children according to the methods requested by the parents
- perform housekeeping duties as time allows.

Nannies may also keep records which include daily observations about each child and information about activities, meals served and medications administered. Nannies usually receive instructions from their employers, but often work with little supervision.

Working Conditions

Child care is physically demanding work, frequently requiring lifting children and equipment weighing up to 25 kilograms. Nannies are on their feet most of the time.

The work can also be emotionally demanding. Some nannies live in the same residence with their employers; others return to their own homes evenings and weekends. Live-in nannies have their own furnished rooms or suites, but may be subject to restrictions regarding telephone calls, visitors or time away from home.

Nannies sometimes travel with the employing family on vacations. In some cases, live-in nannies have their health care premiums paid, are included in the family's club memberships or are allowed personal use of a family vehicle.

Personal Characteristics

Nannies need the following characteristics:

- a genuine interest in children
- physical stamina
- good judgement and the ability to work independently
- patience
- excellent interpersonal skills
- good oral and written communication skills.

They should enjoy working with children, organizing meal preparation and housekeeping duties, and overseeing children's activities.

Educational Requirements

There are **no standard education requirements** for nannies. Some employers consider related experience and the ability to care for children, cook, clean and get along well with others more important than formal education. Most families require job applicants to have a high school diploma or a certificate in Early Childhood Education (for more information, see the Early Childhood Educator occupational profile). Character references are usually requested and some employers require police clearance. First-aid certification and CPR training, and courses related to child care and child development are definite assets.

To ensure that those who apply for permanent residence in Canada will be able to succeed in the general labour market, federal legislation requires that live-in foreign nannies have the equivalent of a Canadian high school diploma, and either six months of caregiving training or a year of caregiving experience in the year prior to application.

SICES International Academy, a private vocational school in Edmonton, offers a 200 hour Caregiver program and a six month Live-in Caregiver program. High school credits may be awarded for some modules in the Live-in Caregiver program.

Employment and Advancement

(section revised JANUARY 2006)

Nannies are employed by private individuals and by private agencies.

Nannies may move into other personal service jobs such as home support aide or residential aide (for more information, see the Personal Care Attendant occupational profile). Experienced nannies who have the required business skills may become family day home operators or open their own placement agencies.

Nannies are part of the larger National Occupational Classification 6474: Babysitters, Nannies and Parents' Helpers. In Alberta, most people employed in this classification work in the following industries:

- **Repair, Maintenance, Personal and Other Services**
- **Health Care and Social Assistance**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 9,250 Albertans are employed in the Babysitters, Nannies and Parents' Helpers occupational group which is expected to grow 1.5 to 2.5 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 130 to 240 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since nannies form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for nannies.)

There is a high employment turnover rate in this occupation so employment opportunities for nannies are readily available.

Salary

(section revised OCTOBER 2005)

Wage rates in this occupation are not covered by minimum wage legislation and nannies' incomes vary considerably. Salaries for live-in, foreign nannies are controlled by federal government legislation.

According to the **2005 Alberta Wage and Salary Survey**, Albertans with three years of experience working part-time or full-time in the Babysitters, Nannies and Parents' Helpers occupational group earned from **$14,800 to $39,700** a year. The average salary was **$22,200 a year**.

Related Occupational Profiles

Domestic Housekeeper
Early Childhood Educator
Personal Care Attendant

Related High School Subjects

Community Health; Foods; Language Arts; and Physical Education

Related Post-Secondary Fields of Study

Personal and Food Services

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Naturopathic Doctor

Produced FEBRUARY 2005

Naturopathic doctors use natural, non-toxic healing therapies to treat patients' diseases and disorders.

NOC Number(s): 3123.3
Minimum Education: 7 years post-secondary education/training
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: I M S

Duties

Naturopathic doctors use natural methods and substances to support and stimulate the body's ability to heal itself. In general, they:

- address the environmental, lifestyle, attitudinal and emotional aspects of health as well as the physical aspects.
- diagnose and treat the causes of disease using natural and non-invasive therapies.
- emphasize disease prevention and health promotion and encourage patients to take responsibility for their own health.

To restore normal body function, naturopathic doctors look for the underlying causes of illness and disease such as:

- nutritional deficiency
- faulty posture
- impurities in the air, water or food
- sensitivities or intolerances (foods, chemicals)
- toxic influences of chemicals, drugs and metals
- inherited predispositions to disease
- physical or psychological stresses
- insufficient rest or recreation
- unsupervised self-treatment
- undiagnosed infections, organisms or imbalances.

Once they have identified the underlying causes of a patient's symptoms, naturopathic doctors develop an individualized treatment plan. Treatments may include:

- botanical medicine
- clinical nutrition
- homeopathic medicine
- acupuncture and oriental medicine
- lifestyle counselling
- physical therapies (e.g. massage, adjustment, hydrotherapy).

Naturopathic doctors may refer patients who have conditions that require treatments such as surgery to other health care practitioners for treatment.

Working Conditions

Most naturopathic doctors work in private clinics. They are on their feet examining patients for part of their working day and at a desk talking to patients and doing paperwork for part of the day. Light lifting (up to 10 kilograms) is required.

Naturopathic doctors may set their own hours. However, for the convenience of their patients, they often work some evenings and weekends.

Personal Characteristics

Naturopathic doctors need the following characteristics:

- the ability to establish rapport with patients and gain their trust and confidence
- emotional strength and maturity
- good communication skills.

They should enjoy gathering information by observing, interviewing and examining patients, providing naturopathic treatments, and advising patients.

Educational Requirements

Training for a career as a naturopathic doctor requires **seven years of post-secondary education:** three years of university-level pre-med sciences followed by four years in a Doctor of Naturopathic Medicine program.

The only fully accredited Doctor of Naturopathic Medicine program in Canada is offered by the **The Canadian College of Naturopathic Medicine** in Toronto. The entrance requirement is three years (15 full-year credits or 90 credit hours) in a bachelor's degree program including courses in biology, general chemistry (with lab), organic chemistry (with lab), biochemistry, psychology and the humanities.

The **Boucher Institute of Naturopathic Medicine** in New Westminster, British Columbia, has obtained candidacy status and is awaiting full accreditation from the Canadian Naturopathic Association. Graduates qualify to take standardized licensing exams.

In the United States, the following four schools of naturopathic medicine offer ND programs:

- **Bastyr University School of Naturopathic Medicine** near Seattle, Washington
- **National College of Naturopathic Medicine** in Portland, Oregon
- **Southwest College of Naturopathic Medicine and Health Sciences** in Scotsdale, Arizona
- **University of Bridgeport College of Naturopathic Medicine** in Bridgeport, Connecticut.

These institutions should be consulted prior to registration in a pre-professional program to ensure that their entrance requirements will be met.

In Alberta, colleges and universities located throughout the province may offer the pre-professional courses required for admission to ND programs. Post-secondary entrance requirements vary depending on the institution and the program but, in general, include a high school diploma with an acceptable average in five appropriate Grade 12 subjects (e.g. English 30, Math 30 or Pure Math 30, Biology 30, Chemistry 30 and Physics 30).

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Other Requirements

To practice naturopathic medicine in regulated Canadian provinces and American states, graduates of Doctor of Naturopathic Medicine programs must pass standardized licensing exams and register with appropriate provincial or state licensing boards.

Employment and Advancement

(section revised JANUARY 2006)

Most naturopathic doctors set up a private practice of their own or join a clinic with other health care practitioners. Some naturopathic doctors are employed in related research and development, marketing, teaching or consulting positions.

As with other health professions, naturopathic practices take time to build and success depends on individual initiative, experience and ability.

Naturopathic doctors are part of the larger National Occupational Classification 3123: Other Professional Occupations in Health Diagnosing and Treating. In Alberta, people employed in this classification work in the **Health Care and Social Assistance** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Health Care and Social Assistance industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)

- **size of the occupation.**

About 250 Albertans are employed in the Other Professional Occupations in Health Diagnosing and Treating occupational group which is expected to grow 2.1 to 3.1 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover. (**Note**: Since naturopathic doctors form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for naturopathic doctors.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Incomes for naturopathic doctors may vary considerably but, in general, are comparable to those of other doctors.

Other Sources of Information

Alberta Association of Naturopathic Practitioners (AANP) website: www.naturopathic-alberta.com

Boucher Institute of Naturopathic Medicine website: www.binm.org

Canadian Naturopathic Association (CNA) website: www.naturopathicassoc.ca

The Canadian College of Naturopathic Medicine website: www.ccnm.edu

Related Occupational Profiles

Acupuncturist
Chiropractor
Herbalist
Homeopath
Massage Therapist
Midwife
Optometrist
Physician
Podiatrist
Reflexologist
Sport Medicine Physician

Related High School Subjects

Community Health; Language Arts; Mathematics; Physical Education; and Science (Biology; and Chemistry)

Related Post-Secondary Fields of Study

Health Care and Medical Sciences

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Nuclear Medicine Technologist

Produced NOVEMBER 2004

Nuclear medicine technologists operate specialized equipment that maps the distribution of radioactive tracers and tagged compounds to assist in the diagnosis and treatment of disease.

NOC Number(s): 3215.2
Minimum Education: 2 years post-secondary education/training
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: **O M i**

Duties

In general, nuclear medicine technologists:

- review patient records
- prepare and administer radioactive substances by mouth or injection
- operate special equipment that detects and maps low concentrations of radioactivity in patients' bodies
- assist and work with patients during test procedures
- calibrate and check equipment for correct functioning
- comply with radiation safety standards for sealed and unsealed sources.

Working Conditions

Nuclear medicine technologists work in hospitals and clinics. They are on their feet for much of the time and may be required to lift up to 25 kilograms. Strict attention to safety procedures is required to avoid accidental exposure to radiation or body fluids.

Personal Characteristics

Nuclear medicine technologists need the following characteristics:

- sensitivity to patient needs
- the ability to maintain a high level of accuracy in their duties
- good organizational skills
- good problem-solving skills.

Educational Requirements

In Alberta, nuclear medicine technologists are trained through **a co-operative two year diploma program**. The first 10 months of academic study, offered at the **Southern Alberta Institute of Technology (SAIT)** in Calgary, are followed by 12 months of practical experience at one or more hospitals, clinics and associated facilities in Edmonton, Calgary or Red Deer. Practicum locations are determined upon acceptance to the program.

The minimum entrance requirement for this program is a high school diploma or equivalent with an overall average of at least 60 per cent in English 30, Math 30 or 31 or Pure Math 30, Chemistry 30, Biology 30 or Physics 30, plus one of the following: Math 31, Language 30, Physics 30, Biology 30, Social Studies 30 or Science 30.

This is a quota program so higher marks are generally required to gain admission. Computer skills and post-secondary science courses are definite assets. Students are selected on the basis of academic record, quality of application, prior experience, understanding of the profession and personal interviews. A medical examination, immunization and a criminal record check are required.

For current information, please check the SAIT calendar or website.

Other Requirements

(section revised AUGUST 2005)

Under Alberta's Health Professions Act, only registered members of the Alberta College of Medical Diagnostic and Therapeutic Technologists (ACMDTT) may call themselves a Magnetic Resonance Technologist, Nuclear Medicine Technologist, Radiographic Technologist or Radiation Therapist. Registered members provide health services listed in Schedule 12 of the Health Professions Act.

Employment and Advancement

(section revised JANUARY 2006)

Nuclear medicine technologists are employed in hospitals and clinics.

Experienced nuclear medicine technologists may take additional training or a Bachelor's degree to move into teaching or administration positions.

Nuclear medicine technologists are part of the larger National Occupational Classification 3215: Medical Radiation Technologists. In Alberta, most people employed in this classification work in the **Health Care and Social Assistance** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Health Care and Social Assistance industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 1,850 Albertans are employed in the Medical Radiation Technologists occupational group which is expected to grow 2.7 to 3.7 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 40 to 70 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since nuclear medicine technologists form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for nuclear medicine technologists.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Medical Radiation Technologists occupational group working part-time or full-time earned from **$37,300 to $71,800 a year.** The average salary was **$57,600 a year.**

For information about current collective agreements in the public and not-for-profit sectors, see the Health Sciences Association of Alberta (HSAA) website.

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

Alberta College of Medical Diagnostic and Therapeutic Technologists (ACMDTT) website: www.acmdtt.com

Canadian Association of Medical Radiation Technologists (CAMRT) website: www.camrt.ca

Calgary Health Region, Nuclear Medicine Technology Program website: www.calgaryhealthregion.ca/di/6-Education/NucMed/Nuclear_Medicine_Main.htm

Health Sciences Association of Alberta (HSAA) website: www.hsaa.ca

Related Occupational Profiles

Diagnostic Medical Sonographer
Magnetic Resonance Technologist
Radiation Therapist
Radiological Technologist

Related High School Subjects

Community Health; Language Arts; Languages (other than English); Mathematics; Physical Education; Science (Biology; Chemistry; and Physics); and Social Studies

Related Post-Secondary Fields of Study

Health Care and Medical Sciences

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Nurse Practitioner

Produced OCTOBER 2004

Nurse practitioners are registered nurses who have advanced training in health assessment, health promotion and illness prevention. They diagnose and treat health problems, order and interpret tests, and prescribe drugs.

NOC Number(s): 3152
Minimum Education: 6 years post-secondary education/training
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: **S M D**

Duties

Duties and responsibilities in this occupation vary from province to province in Canada. In Alberta, nurse practitioners may:

- complete comprehensive health assessments
- diagnose health problems
- counsel patients regarding health problems
- order and interpret diagnostic tests
- refer patients to other health care providers as needed
- prescribe medications to treat common diseases, disorders and injuries
- consult and collaborate with physicians
- participate in initiatives to promote community health.

Nurse practitioners work independently from the beginning of patient care to working with other care professionals. They may specialize in:

- care throughout the lifespan
- acute care
- caring for people in particular age groups (infants, children, seniors)
- occupational health
- mental health
- emergency care
- women's health.

Working Conditions

Nurse practitoners work in a variety of health care settings, sometimes in isolated communities. They may work regular clinic hours and be on call for emergencies, or work shifts including nights, weekends and holidays.

Nurse practitioners often are exposed to infectious diseases and required to lift items weighing up to 10 kilograms. Their work can be intellectually and emotionally demanding as well as physically demanding.

Personal Characteristics

Nurse practitioners need the following characteristics:

- problem solving and critical thinking abilities
- excellent verbal and written communication skills
- organizational skills
- good judgment and the ability to make decisions quickly in stressful situations
- patience, understanding and a caring attitude
- flexibility, humour and enthusiasm
- the ability to lead and work co-operatively with others
- general good health.

They should enjoy working with and consulting others, solving problems, providing care and directing the work of others.

Educational Requirements

Nurse practitioners start their careers as registered nurses. After 4500 hours of clinical nursing experience, the recommended education route is a **master's degree** in advanced nursing practice.

In Alberta, the following post-secondary institutions offer master's degree programs in nursing:

- **Athabasca University** offers a distance education program. Entrance requirements include a Canadian bachelor's degree in nursing or equivalent and at least two years of professional nursing experience. There are computer system requirements for this program.
- the **University of Alberta** in Edmonton. Entrance requirements include an average of at least 3.0 (based on a 4.0 system) in the last 10 full course equivalents of a bachelor's degree program in nursing, or equivalent, undergraduate courses in statistics and research methods, and at least one year of related clinical nursing experience.
- the **University of Calgary**. The entrance requirement is an average of at least 3.0 (based on a 4.0 system) in the last two years of full-time study of a bachelor's degree program in nursing, or equivalent, undergraduate courses in statistics and research methods, and at least three years of related clinical experience. The University of Calgary also has a post-master's Nurse Practitioner continuous learning initiative. Qualified applicants may be allowed to take the Master of Nursing program and the Nurse Practitioner program concurrently.

For information about bachelor's degree programs in nursing, see the Registered Nurse occupational profile.

Other Requirements

Under current legislation in Alberta, only members of the Alberta Association of Registered Nurses (AARN) on the nurse practitioner roster may call themselves or practice as a Nurse Practitioner.

Employment and Advancement

(section revised JANUARY 2006)

Nurse practitioners are employed in health care facilities such as hospitals and clinics. Many work in small or remote communities that do not have resident physicians.

Nurse practitioner is not an entry level position.

Nurse practitioners are part of the larger National Occupational Classification 3152: Registered Nurses. In Alberta, most people employed in this classification work in the **Health Care and Social Assistance** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Health Care and Social Assistance industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 27,150 Albertans are employed in the Registered Nurses occupational group which is expected to grow 3.3 to 4.3 per cent each year from 2005 to 2010 in Alberta. It is forecasted that over 600 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since nurse practitioners form only a small part of the occupational group on which this forecast is based, only a small portion of the new positions created will be for nurse practitioners.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised JANUARY 2006)

Nurse practioners negotiate their own salaries which may range **up to $90,000 per year (2004 estimate).**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Association of Registered Nurses (AARN) website: www.nurses.ab.ca

Related Occupational Profiles

Community Health Nurse
Physician
Registered Nurse

Related High School Subjects

Community Health; Language Arts; Languages (other than English); Mathematics; Physical Education; Science (Biology; and Chemistry); and Social Studies

Related Post-Secondary Fields of Study

Health Care and Medical Sciences

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Nursery Operator

Produced DECEMBER 2003

Nursery operators plan, organize and direct the activities of nursery staff who propagate, grow and market trees, shrubs and perennial plants.

NOC Number(s): 8254
Minimum Education: 2 years post-secondary education/training
Employment Outlook: Employment turnover plus below average occupational growth in Alberta
Interests: **D M S**

Duties

Nursery operators run wholesale and retail horticultural firms ranging in size from small family businesses to operations employing over a hundred people on a full-time or seasonal basis. They may deal with all kinds of trees and shrubs or specialize in a particular type. Their duties and responsibilities therefore vary but, in general, nursery operators:

- determine the varieties and quantities of trees, shrubs and perennials to grow
- determine the environmental conditions required to grow the plants selected and set planting and care schedules accordingly
- program irrigation control computers
- supervise staff in planting, transplanting, pruning, feeding and spraying trees and shrubs
- identify and control problems caused by insects, rodents, birds, diseases and weeds
- ensure the safe handling, use, storage and disposal of pesticides
- develop marketing plans
- provide customers with information on the selection and care of trees and shrubs
- order equipment and supplies and oversee equipment maintenance
- hire, train and supervise staff
- prepare budgets and maintain records.

In smaller operations, nursery operators may also perform some of the hands-on work in nurseries:

- prepare soil for planting
- set up and maintain irrigation systems
- construct greenhouses for seedlings
- plant seeds and cuttings, graft plants, transplant seedlings and rooted cuttings, and train and prune plants
- remove weeds, spray plants with pesticides and apply fertilizers
- dig, prune and transplant trees and shrubs
- prepare trees and shrubs for sale or shipment.

Working Conditions

Nursery operators work outdoors in fields and shade houses and indoors in greenhouses and offices. They often work long, irregular hours, particularly in the spring and summer months. The work can be hectic at times and satisfying customer needs can be stressful. Some of the hands-on work is strenuous; lifting up to 25 kilograms may be required.

Personal Characteristics

Nursery operators need the following characteristics:

- self-motivation and the ability to direct and motivate others
- decision-making skills
- manual dexterity
- no severe allergies to plants, tree pollen, pesticides or other chemicals
- patience

- an eye for detail.

Those in retail operations must also be able to deal courteously and effectively with the public.

Nursery operators should enjoy directing the work of others, organizing nursery operations and providing information to customers.

Educational Requirements

(section revised JULY 2004)

In the past, many nursery operators worked their way up to supervisory positions in greenhouses and nurseries by learning on the job and taking related courses. However, graduates of post-secondary education programs in horticulture have a better chance of advancing to supervisory and management positions than those who do not have related post-secondary education.

In Alberta, the following institutions offer horticulture-related programs:

- **Medicine Hat College** offers a one year Horticultural Technician certificate program with a specialization in production or ornamentals. The program includes two practicums and 120 hours of work experience. The entrance requirement is a high school diploma or equivalent with at least 55 per cent in Grade 12 English and Grade 11 math (pure or applied), biology and chemistry.
- the **Northern Alberta Institute of Technology** in Fairview offers a one year Horticulture Technician certificate program with a specialization in horticultural management. The program includes 16 weeks of work experience. The entrance requirement is a high school diploma with Grade 11 English, science and math.
- **Olds College** offers:
    - a two year Horticulture diploma program with a specialization in nursery/field production. The entrance requirement is a high school diploma or equivalent with at least 55 per cent in Grade 12 English, Chemistry 20, Biology 20, and Pure or Applied Math 20 (or equivalent).
    - a post-diploma Bachelor of Applied Horticulture degree program with a specialization in production horticulture. The entrance requirement is a diploma or degree in a closely-related area and at least four months of experience in the horticulture industry.
    - related distance education programs.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Short courses and workshops in horticulture are also offered by the following organizations:

- **Alberta Agriculture, Food and Rural Development** offers workshops at Crops Diversification Centres in the North (Edmonton) and South (Brooks)
- **Landscape Alberta Nursery Trades Association.**

Other Requirements

Depending on the type of operation, nursery operators who work with pesticides may require a Landscape Alberta Pesticide Applicator Certificate from the Pesticide Management Program at Lakeland College. Those who sell pesticides must hold a Pesticide Applicator Certificate or Commercial Pesticide Dispenser Certificate (or employ at least one staff member who has the appropriate certificate).

Employment and Advancement

(section revised JANUARY 2006)

Most nursery operators are self-employed or employed as retail or wholesale nursery managers. Some work for government departments and research centres.

Nursery operators generally start in junior positions and work their way up (or start their own businesses). Nursery worker positions may be full-time, part-time or seasonal. Advancement depends on performance and the availability of supervisory positions. Opportunities for advancement beyond the nursery operator level are limited.

Nursery operators are part of the larger National Occupational Classification 8254: Nursery and Greenhouse Operators and Managers. In Alberta, most people employed in this classification work in the **Agriculture** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Agriculture industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 300 Albertans are employed in the Nursery and Greenhouse Operators and Managers occupational group, which is expected to 0.5 to 1.5 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover. (**Note**: Since nursery operators form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for nursery operators.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Earnings for nursery operators vary considerably, particularly for those who are self-employed.

According to the **2005 Alberta Wage and Salary Survey**, Albertans working part-time or full-time in the Nursery and Greenhouse Operators and Managers occupational group earned **up to $66,000 a year**. Those with three years of experience earned from **$21,100 to $52,800 a year.** The average salary was **$29,200 a year**.

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Environment Pesticide Management Program website: www.gov.ab.ca/env/protenf/pesticide/index.html

Canadian Nursery Landscape Association website: www.canadanursery.com

Landscape Alberta Nursery Trades Association website: www.landscape-alberta.com

Related Occupational Profiles

Arborist
Greenhouse Operator
Landscape Architectural Technologist
Landscape Gardener
Market Gardener
Pest Control Operator

Related High School Subjects

Agriculture; Construction Technologies; Electro-Technologies; Financial Management; Language Arts; Management and Marketing; Mathematics; Physical Education; and Science (Biology; and Chemistry)

Related Post-Secondary Fields of Study

Agriculture and Related Technologies

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Occupational Health and Safety Inspector

Produced MARCH 2005

Occupational health and safety inspectors visit places of employment to detect unsafe or unhealthy working conditions, and ensure compliance with laws and regulations governing workplace safety.

NOC Number(s): 2263
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **M I D**

Duties

Occupational health and safety inspectors employed by federal, provincial and municipal governments inspect a wide variety of workplaces (e.g. construction sites, offices, mines). They may specialize in inspecting a particular type of workplace but, in general, inspectors:

- conduct workplace inspections and enforce health and safety laws and regulations
- review and make decisions regarding situations where a worker has refused to work on the grounds that danger exists, or the work will cause danger to workers
- collect information and provide advice regarding the development of healthy and safe work practices
- encourage managers and employees to participate in occupational health and safety programs
- investigate workplace fatalities and serious injuries.

These duties require health and safety inspectors to have a thorough understanding of legislation relating to safety standards and some understanding of how to counsel and motivate people. Health and safety inspectors must also keep informed about changes in technology.

For information about health and safety officers employed by companies, see the Safety Officer occupational profile.

Working Conditions

Health and safety inspectors are usually responsible for a territory or specific industrial process. Working hours depend on the types of workplaces they inspect. Overtime may be required, particularly after an accident or a hazardous situation has been identified.

Although duties have to be carried out in the field, health and safety inspectors spend much of their time in offices located at central or regional headquarters. In the field, they are required to enter confined spaces, climb ladders and work in dusty conditions.

Personal Characteristics

Health and safety inspectors need the following characteristics:

- good communication skills, both in writing and in person
- mediation and conflict resolution skills
- the ability to remain open-minded and objective
- good health and physical fitness
- an outgoing personality.

They should enjoy having clear rules and organized methods for their work, analyzing information, and dealing with people.

Educational Requirements

There are **no standard education requirements** for health and safety inspectors. However, most inspectors have one or more of the following qualifications:

- a related college or technical institute diploma
- a university degree with a technical/science orientation (eg. engineering, toxicology, psychology, medicine)
- journeyman certification
- a safety professional designation (see below)
- extensive, related work experience.

Those already employed in safety-related positions may take related continuing education courses such as:

- the 325 hour Occupational Health and Safety Certificate program offered by the **University of Alberta** through the Faculty of Extension in the following locations: Edmonton, Red Deer (Red Deer College), Grande Prairie (Grande Prairie Regional College), Calgary and Fort McMurray (Keyano College). This evening study program can take from one to two years to complete and is designed for practicing and prospective health and safety inspectors. Applicants for the progam must be at least 21 years of age, have a high school diploma and have some experience in the work force.
- the Occupational Health and Safety certificate program offered by the **British Columbia Institute of Technology (BCIT)** in Burnaby, B.C. Students normally take two to five years to complete this distance education program.
- the Occupational Health and Safety distance education program offered by **Ryerson University** in Toronto.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Outside Alberta, the following institutions offer related full-time programs:

- **BCIT** offers a two year Occupational Health and Safety diploma program. The entrance requirement is a high school diploma with Grade12 English and math, and Grade 11 chemistry and physics. An interview is required. Preference is given to applicants who have completed the entrance requirements within five years prior to application.
- **Ryerson University** in Toronto offers a four year Bachelor of Applied Science degree program in occupational and public health. The entrance requirement for Alberta applicants is a high school diploma with an overall average of at least 70 per cent in five academic Grade 12 subjects (including English 30) and a minimum of 60 per cent in Chemistry 30 *or* Biology 30. Both sciences, as well as Physics 30 and Math 30 or 31 (or equivalent) are recommended. Ryerson also offers a two year program for applicants who already have a bachelor's degree from an accredited university.

Other Requirements

The Board of Canadian Registered Safety Professionals offers the designation Canadian Registered Safety Professional (CRSP) to applicants who have been employed as safety professionals for at least three years and have successfully completed an evaluation, interview and examination process.

Employment and Advancement

Occupational health and safety inspectors are employed by federal, provincial and municipal governments.

Advancement to management positions is usually through competition and depends on the individual's initiative, management skills, educational background and work experience.

Occupational health and safety inspectors are part of the larger National Occupational Classification 2263: Inspectors in Public and Environmental Health and Occupational Health and Safety. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Public Administration**
- **Oil and Gas Extraction**
- **Professional and Technical Services**
- **Health Care and Social Assistance**

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)

- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 2,100 Albertans are employed in the Inspectors in Public and Environmental Health and Occupational Health and Safety occupational group which is expected to grow 1.0 to 2.0 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 20 to 50 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since occupational health and safety inspectors form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for occupational health and safety inspectors.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Inspectors in Public and Environmental Health and Occupational Health and Safety occupational group working part-time or full-time earned from **$18,300 to $172,300 a year.** The average salary was **$62,500 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Board of Canadian Registered Safety Professionals (BCRSP) website: www.acrsp.ca

Canadian Centre for Occupational Health and Safety (CCOHS) website: www.ccohs.ca

Canadian Council for Human Resources in the Environment Industry (CCHRE) website's EnviroEmployment section: www.cchrei.ca/ee/

Related Occupational Profiles

Environmental Auditor
Environmental Engineer
Hazardous Waste Management Technologist
Human Resources Professional
Occupational Hygienist
Public Health Inspector
Safety Codes Officer
Safety Officer

Related High School Subjects

Community Health; Construction Technologies; Energy and Mines; Forestry; Language Arts; Legal Studies; Mathematics; Physical Education; Science (Biology; Chemistry; and Physics); and Social Studies

Related Post-Secondary Fields of Study

Engineering and Science Technologies; Engineering, Architecture and Related Studies; Health Care and Medical Sciences; Sciences; and Trades, Industrial and Related Training

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For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Occupational Health Nurse

Produced SEPTEMBER 2004

Occupational health nurses are registered nurses who are employed by businesses to promote employee health, prevent disease and injury, provide first aid and nursing care when required, and facilitate the rehabilitation of sick or injured employees.

NOC Number(s): 3152.2
Minimum Education: 3 years post-secondary education/training
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: S M D

Duties

Duties and responsibilities vary from one position to another but, in general, occupational health nurses:

- provide health counselling and medical referral services for employees
- work with others in the organization to plan, implement and evaluate employee wellness programs (e.g. immunization programs, safety training, fitness programs)
- promote compliance with legislation and regulations related to health and safety and Workers' Compensation
- conduct health examinations
- facilitate disability case management to promote the early return to work of ill or injured employees
- assess work environments to identify health and safety hazards or work with an occupational health and safety team to keep work environments as safe as possible
- provide emergency care as needed in the workplace and arrange for further care if necessary
- collect and assess data (e.g. incidents of illness, injury) to identify trends and evaluate the effectiveness of safety or wellness programs
- prepare accident reports and maintain records
- keep employee records confidential.

Occupational health nurses also may:

- design and lead health safety and wellness training programs
- treat non-occupational injuries and minor illnesses
- conduct testing or screening programs (e.g. audiometric testing, drug testing, blood pressure screening)
- assess potential employees' physical and emotional capacity to safely perform particular jobs.

Working Conditions

Occupational health nurses may work in hospital, government, school or industrial environments. They usually work standard weekday office hours although, in industrial environments, they may be required to work shifts that include evening or weekend hours. Some travel may be required in organizations that have multiple locations.

Nurses often are exposed to contagious diseases and routinely lift items weighing up to 10 kg.

Personal Characteristics

Occupational health nurses nurses need the following characteristics:

- problem solving and critical thinking abilities
- good verbal and written communication skills
- organizational skills
- good judgment and the ability to make decisions quickly, especially in stressful situations
- patience, understanding and a caring attitude
- flexibility, humour and enthusiasm
- the ability to lead and work co-operatively with others

- the interpersonal and negotiation skills required to settle disputes.

They should enjoy working with and consulting others, systematically compiling information for records, operating medical equipment, and caring for ill or injured employees.

Educational Requirements

Occupational health nurses are registered nurses who have additional education in the field of occupational health. In Alberta, registered nurse status requires a **diploma or bachelor's degree in nursing**. For information about diploma and degree programs in nursing, see the Registered Nurse occupational profile.

Employers generally prefer to hire registered nurses who have:

- at least five years of general nursing experience
- advanced first aid certification or other job-related certification (e.g. instructor certification to teach first aid, audiometric certification)
- a certificate in occupational health nursing from a post-secondary education institution, a Canadian Occupational Health Nursing Certificate from the **Canadian Nurses Association**, or other related post-secondary education (e.g. courses in management, research, toxicology, disability management, audiometry or spirometry).

Grant MacEwan College in Edmonton offers the only Occupational Health Nursing certificate program in Alberta. Applicants must be eligible for registration as a registered nurse and have successfully completed the course NURS -340: Health Assessment or equivalent. This is an individualized program offered through distance learning or home study.

Other Requirements

(section revised OCTOBER 2004)

Under the current legislation governing registered nurses in Alberta, the Nursing Profession Act and associated regulations, only registered members of the Alberta Association of Registered Nurses (AARN) may call themselves or practice as a Registered Nurse.

Employment and Advancement

(section revised JANUARY 2006)

Occupational health nurses are employed by large corporations, government departments, industry associations and occupational health consulting firms. Some self-employed nurses provide services for several organizations on a contract basis.

Experienced occupational health nurses may advance to supervisory or management positions responsible for employee wellness programs.

Occupational health nurses are part of the larger National Occupational Classification 3152: Registered Nurses. In Alberta, most people employed in this classification work in the **Health Care and Social Assistance** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 27,150 Albertans are employed in the Registered Nurses occupational group which is expected to grow 3.3 to 4.3 per cent each year from 2005 to 2010 in Alberta. It is forecasted that over 600 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since occupational health nurses form only a small part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for occupational health nurses.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Incomes for occupational health nurses vary depending on the employer and the nurse's hours, educational qualifications, experience and responsibilities.

According to the **2005 Alberta Wage and Salary Survey**, Albertans working part-time or full-time in the Occupational Health Nurses occupational group earned **up to $87,300 a year.** Those with three years of experience earned from **$38,900 to $74,100 a year.** The average salary was **$72,700 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Association of Registered Nurses (AARN) website: www.nurses.ab.ca

Alberta Occupational Health Nurses Association (AOHNA) website: www.aohna.ab.ca

Canadian Federation of Nurses Unions (CFNU) website: www.nursesunions.ca

Canadian Nurses Association (CNA) website: www.cna-nurses.ca

Canadian Occupational Health Nurses Association (COHNA) website: www.cohna-aciist.ca

United Nurses of Alberta (UNA) website: www.una.ab.ca

Related Occupational Profiles

Community Health Nurse
Psychiatric Nurse
Registered Nurse
Respiratory Therapist

Related High School Subjects

Community Health; Enterprise and Innovation; Information Processing; Language Arts; Languages (other than English); Mathematics; Physical Education; Science (Biology; and Chemistry); and Social Studies

Related Post-Secondary Fields of Study

Health Care and Medical Sciences

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Occupational Hygienist

Produced MARCH 2005

Occupational hygienists study, anticipate and evaluate hazards and stresses in workplaces, suggest changes to work environments and processes, and provide information to managers and workers on ways to reduce the risk of injury or illness from occupational hazards.

NOC Number(s): 4161.2
Minimum Education: 4 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **I D M**

Duties

Occupational hygienists check work environments and processes for:

- chemical agents (e.g. dust, gases, vapours)
- physical agents (e.g. heat, cold, noise, radiation)
- biological agents (e.g. viruses, bacteria, molds)
- hazards related to musculo-skeletal disorders (e.g. repetitive work, poor equipment design, heavy work).

Specific duties and responsibilities may vary considerably from one job to another. In general, however, occupational hygienists:

- observe processes, procedures and operating conditions both inside and outside work sites
- develop strategies for evaluating the work site to determine the degree of risk
- collect and analyze samples to assess worker exposure to physical, chemical and biological agents
- use direct reading instruments, sampling techniques and other methods to measure levels of light, heat, noise and radiation
- determine airborne exposure concentrations of contaminants and compare them to regulatory standards and guidelines and accepted occupational exposure criteria
- evaluate the effectiveness of control strategies implemented to protect against workplace exposures and hazards (e.g. personal protective equipment, ventilation systems)
- interpret the results of exposure evaluations and determine risk to human health based on scientific research
- work with other scientists, engineers and professionals to design control measures, and consult with physicians regarding occupational health effects
- report and document investigations, audits and conclusions
- recommend ways to control workplace hazards through engineering methods, improved work procedures and protective equipment
- work with occupational health and safety committees.

Occupational hygienists also may:

- design, implement and manage occupational hygiene programs
- advise managers and employees about regulations, standards, legal compliance, risk assessment and ways to reduce risk
- teach safe work procedures
- prepare and review material safety data
- interpret the results of surveys to assess the degree of risk and determine requirements for remedial action
- review product and process design to minimize risk of injury or illness
- work on environmental health and exposure issues
- participate in emergency response planning by providing information on health hazards, protective equipment and work procedures to help protect emergency response personnel and the public
- conduct investigations into apparent work-related health problems

- develop and implement standards for health and safety management systems
- testify at hearings (eg. Workers' Compensation Board hearings, environmental pollution hearings)
- report important findings at scientific conferences or in scientific journals.

Working Conditions

Work environments and hours vary tremendously in this occupation. Occupational hygienists work in offices, laboratories and industrial plants (which may operate 24 hours a day). They must wear protective gear when observing work processes in industrial plants or conducting tests. In some cases, the work may involve climbing ladders or accessing industrial plant equipment in confined spaces. Travel to remote facilities is often required.

Personal Characteristics

Occupational hygienists need the following characteristics:

- good oral and written communication skills
- the intellect, patience and perseverance required to solve complex problems
- the ability to think quickly and act decisively when a situation requires it
- an even temperament combined with tact and confidence
- commitment to worker health and safety
- the ability to establish rapport with all kinds of people.

They should enjoy exploring problems in depth, consulting with others and taking a methodical approach to their work.

Educational Requirements

The minimum academic requirement for occupational hygienists is a **four year university degree related to occupational hygiene** (in the environmental, physical, chemical or health sciences, or engineering). Most occupational hygienists start with a bachelor's degree in science or engineering, then take further education specifically related to occupational hygiene (e.g. a master's degree or university certificate in occupational hygiene or health and safety).

Suitable four year bachelor's degree programs are offered by post-secondary institutions throughout Alberta. Admission requirements vary but generally include a high school diploma with a minimum average (ranging from 60 to 80 per cent depending on the program) in English Language Arts 30-1 or English 30, and four other appropriate Grade 12 subjects (e.g. 30 level math and science courses).

Many post-secondary institutions offer university transfer programs that allow students to apply up to two years of study toward university bachelor's degree programs. It is the student's responsibility to ensure that the courses they choose to take will be accepted for credit at the institution to which they wish to transfer.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Ryerson University in Toronto offers the only four year undergraduate degree program in Canada with a specialization in Occupational Health and Safety.

Related graduate programs are offered by:

- **Dalhousie University**, Sexton Campus, Nova Scotia (certificate program)
- **McGill University** in Montreal (graduate degree programs)
- the **University of Alberta** (certificate program offered at locations throughout the province)
- the **University of British Columbia** in Vancouver (graduate degree programs)
- the **University of New Brunswick** (online certificate program)
- the **University of Toronto** (graduate degree programs)
- the **University of Victoria** (distance education certificate program).

Other Requirements

Certification is voluntary in Alberta. Two organizations offer certification for occupational hygienists:

- Registration with the Canadian Registration Board of Occupational Hygienists (CRBOH) confers the right to use the title Registered Occupational Hygienist (ROH) or Registered Occupational Hygiene Technologist (ROHT).
- Registration with the American Board of Occupational Hygiene (ABIH) confers the right to use the title Certified Industrial Hygienist (CIH) or Certified Associate Industrial Hygieinist (CAIH).

Applicants for these designations must have a suitable combination of education and work experience, and pass a qualifying exam.

Employment and Advancement

(section revised JANUARY 2006)

Occupational hygienists work for:

- industrial plants
- governments
- consulting firms
- public utilities
- insurance companies
- hospitals
- labour unions
- educational and research institutions.

Experienced occupational hygienists may be promoted to management positions or set up their own consulting firms. Advancement for those who have doctoral degrees generally takes the form of salary increases, more demanding research responsibilities or senior management positions.

Industry and government often work co-operatively on health and safety issues. Opportunities exist for occupational hygienists to work on industry-wide and even international projects through industry groups.

Occupational hygienists are part of the larger National Occupational Classification 4161: Natural and Applied Science Policy Researchers, Consultants and Program Officers. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Professional and Technical Services**
- **Public Administration**
- **Oil and Gas Extraction**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- changes in occupational health and safety legislation
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

About 1,600 Albertans are employed in the Natural and Applied Science Policy Researchers, Consultants and Program Officers occupational group which is expected to grow 1.7 to 2.7 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 20 to 50 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since occupational hygienists form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for occupational hygienists.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Natural and Applied Science Policy Researchers, Consultants, and Program Officers occupational group working part-time or full-time earned from **$17,600 to $116,200 a year.** The average salary was **$61,500 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

American Board of Occupational Hygiene (ABIH) website: www.abih.org

Canadian Registration Board of Occupational Hygienists (CRBOH) website: www.crboh.ca

Related Occupational Profiles

Environmental Auditor
Ergonomist
Occupational Health and Safety Inspector
Safety Officer

Related High School Subjects

Communication Technology; Community Health; Energy and Mines; Information Processing; Language Arts; Mathematics; and Science (Biology; Chemistry; and Physics)

Related Post-Secondary Fields of Study

Engineering, Architecture and Related Studies; Environment, Forestry and Related Studies; Health Care and Medical Sciences; and Sciences

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For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Occupational Therapist

Produced FEBRUARY 2005

Occupational therapists help people whose capabilities have been impaired by physical or mental illness or injury, emotional or developmental problems, or the aging process to improve their ability to function in everyday life. They assist people in caring for themselves, returning to work and resuming community activities.

NOC Number(s): 3143
Minimum Education: 4 years post-secondary education/training
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: **S I M**

Duties

Occupational therapists identify, plan and implement client-centred programs to enhance clients' abilities to care for themselves and participate in all aspects of life (work, school, recreation). In general, this involves:

- evaluating each client's level of functioning in areas of self-care, productivity and leisure
- developing intervention programs
- monitoring client progress, evaluating outcomes and changing programs as needed
- making recommendations, as an independent consultant or in conjunction with a multi-disciplinary team of professionals, regarding client discharge, home or school management, transfer to alternate programs, integration into the community or return to work.

Intervention programs may include:

- environmental changes that help clients perform daily tasks
- purposeful occupations (meaningful activities) that help clients restore or maintain function and prevent disability
- orthotic devices or splints that position, protect and support injured limbs or help clients regain normal movement
- vocational assessment and retraining that develops or improves work-related skills
- self-help strategies that train or retrain clients in daily living activities
- health promotion and disability prevention strategies
- group activities or discussions that facilitate social adjustment, alleviate stress through self management techniques and promote client well being by providing choices.

For example, occupational therapists may:

- teach clients new ways to perform daily chores, manage their finances and shop for groceries
- help clients develop skills to cope with anxiety, substance (drug or alchohol) abuse, stress, decreased energy or normal aging
- work with parents, teachers and other professionals to help children achieve success at home, in school and in the community
- adapt evironments in schools, homes, workplaces and communities to assist people in their daily living (e.g. by changing the layout of a home to make it more accessible or help prevent further injury)
- help clients regain the use of an injured body part or improve strength, endurance, movement and self-confidence
- use assistive technologies such as mobility devices and safety equipment to promote participation in meaningful activities.

Working Conditions

Occupational therapists usually work standard office hours although some positions require evening and weekend work. In clinical settings, they may spend much of their working day standing, bending and assisting patients. Lifting (up to 25 kilograms or more) may be required in some employment settings.

Personal Characteristics

Occupational therapists need the following characteristics:

- excellent problem solving abilities
- good organizational skills
- good interpersonal skills
- the ability to communicate well in person and in writing
- the ability to work with little supervision
- creativity
- empathy.

They should enjoy working with people, finding innovative ways to deal with challenges and taking a methodical approach to their work.

Educational Requirements

The current minimum education requirement is a bachelor's degree in occupational therapy or equivalent. However, the **Canadian Association of Occupational Therapists (CAOT)** has announced that, as of 2008, it will only grant academic accreditation to occupational therapy programs that lead to a master's degree in occupational therapy.

In Alberta, the **University of Alberta** in Edmonton offers a Bachelor of Science in Occupational Therapy (B.Sc.O.T.) degree. The degree requires two years of pre-professional studies at the university level and two years of course work in the Faculty of Rehabilitation Medicine that include a thousand hours of field work in accredited facilities. Prior to their final year, students who have a previous degree and sufficiently high standing in the B.Sc.O.T. program may apply for transfer to a course-based master's program.

74 students are admitted to the Occupational Therapy program each year, of which 64 students are Alberta residents. Two positions are available to applicants of Aboriginal ancestry. The applicant selection process is competitive and preference is given to applicants who have completed three credits each in psychology, sociology, statistics, interpersonal communication and introductory human anatomy, and six credits in physiology. Students planning their university studies are strongly advised to consult the University of Alberta calendar or website for more detailed information about course requirements.

Post-secondary institutions throughout the province offer one year and two year university tranfer programs. Admission requirements vary but generally include a high school diploma or equivalent with a minimum average (ranging from 60 to 80 per cent depending on the program) in English 30 and four other appropriate 30-level subjects. Math and science courses are recommended for students planning to go on to study occupational therapy.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Other Requirements

Under Alberta's Occupational Therapy Profession Act and General Regulation, only registered members of the Alberta Association of Registered Occupational Therapists (AAROT) who hold a practice permit may call themselves an Occupational Therapist.

Employment and Advancement

(section revised JANUARY 2006)

Occupational therapists may work in private practice or be employed in:

- general, psychiatric, convalescent or children's hospitals
- rehabilitation centres
- Workers' Compensation Board centres
- home care
- community rehabilitation programs
- alcohol and drug addiction clinics
- continuing care facilities
- schools
- universities

- regional health authorities
- homes, group homes and lodges
- mental health care facilities
- community mental health agencies
- industrial settings
- sheltered workshops
- vocational assessment units
- insurance companies.

Occupational therapists are employed in community programs and private practice where they may offer a services such as medical/legal evaluations. Those who are self-employed often provide consulting services for various levels of government.

In Alberta, over 75 per cent of people employed as occupational therapists work in the **Health Care and Social Assistance** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Health Care and Social Assistance industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 1,250 Albertans are employed in the Occupational Therapists occupational group which is expected to grow 3.3 to 4.3 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 40 to 60 **new** positions will be created each year **in addition** to job openings created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Occupational Therapists occupational group working part-time or full-time earned from **$23,100 to $71,600 a year.** The average salary was **$56,200 a year.**

For information about current collective agreements in the public and not-for-profit sectors, see the Health Sciences Association of Alberta (HSAA) website.

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

Alberta Association of Registered Occupational Therapists (AAROT) website: www.aarot.ca

Health Sciences Association of Alberta (HSAA) website: www.hsaa.ca

Related Occupational Profiles

Career Development Professional
Expressive Arts Therapists
Occupational Therapist Assistant
Physiotherapist
Recreation Therapist

Related High School Subjects

Community Health; Financial Management; Language Arts; Mathematics; Physical Education; and Science (Biology; and Chemistry)

Related Post-Secondary Fields of Study

Health Care and Medical Sciences

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Occupational Therapist Assistant

Produced DECEMBER 2004

Occupational therapist assistants help occupational therapists implement treatment programs that are designed to develop, improve or maintain clients' abilities to function independently.

NOC Number(s): 3414.2
Minimum Education: 2 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **M S o**

Duties

Occupational therapist (OT) assistants support occupational therapists in their work with clients whose abilities to function and adapt have been impaired by illness or injury, emotional disorders, developmental disorders, social disabilities or the process of aging. Clients range in age from infants to the elderly.

Working under the supervision of occupational therapists, OT assistants:

- gather relevant materials in preparation for client treatment and education
- implement treatment plans designed by occupational therapists for individual clients and groups
- observe and document client behaviour, and report to the supervising therapist
- prepare, clean, maintain, adjust and make minor repairs to equipment
- maintain inventories, and order supplies and equipment
- schedule appointments and collect statistics
- maintain and promote a positive attitude toward clients and their treatment programs
- help clients learn skills needed for daily living (self-care, productivity and leisure)
- assist in completing splints and creating or repairing assistive devices
- assist in making adaptations to seating for clients
- assist in educating clients regarding joint protection techniques and energy conservation.

For example, an occupational therapist assistant may:

- guide a child with co-ordination problems in a game that teaches skills needed for dressing and undressing
- help someone who has arthritis practice using specially designed tools for cooking and cleaning
- help someone who has mental health problems to practice and gain confidence in community living and social skills.

Working Conditions

Most occupational therapist assistants work in settings related to health care. To avoid injury, they must use proper methods for lifting items that may weight up to 25 kilograms and handling clients and equipment.

Most assistants work daytime hours, although their hours can vary. In some environments, evening and weekend work is required.

Personal Characteristics

Occupational therapist assistants need the following characteristics:

- physical and mental fitness
- patience, tact and flexibility
- good observation skills
- good organizational skills
- sensitivity to clients' feelings and needs
- the interpersonal skills required to work effectively with people of various ages who may be under physical or emotional stress

- the ability to follow directions and work as part of a team
- the creative and manual skills required for activities such as crafts, music, carpentry and sewing
- good oral and written communication skills
- the strength and stamina required to assist people who have disabilities.

They should enjoy having clear guidelines for their work, helping people individually and in groups, and handling and maintaining equipment and supplies.

Educational Requirements

(section revised APRIL 2005)

Employers generally require applicants for occupational therapist assistant positions to be graduates of occupational therapist assistant diploma programs or have an equivalent combination of education and experience.

In Alberta, the following institutions offer therapist assistant programs:

- **Grant MacEwan College** in Edmonton offers a two year Therapist Assistant diploma program that prepares graduates for work as an occupational therapist assistant or physical therapist assistant (or both). Applicants must have a high school diploma or equivalent with an average of at least 65 per cent in English 30, Biology 30, Chemistry 30 or Science 30, and two other Grade 12 subjects.
- **Medicine Hat College** offers a two year Occupational Therapy Assistant diploma program onsite and by distance education. Applicants must have a high school diploma or equivalent with at least 60 per cent in English 30, Biology 30, and two other 30 or 33-level subjects, one of which must be a 30-level science or math. Students must have obtained a current Basic CPR Certficate (BCLS), a Standard First Aide Certificate and updated immunizations.
- The **Southern Alberta Institute of Technology** in Calgary offers a 14 month Rehabilitation Therapy Assistant certificate program via an alternate delivery model. Students take a core curriculum for the first two semesters (September - April) and then branch into one of two areas: occupational therapist assistant or physical therapist assistant. Applicants must have a high school diploma or equivalent with an overall average of at least 60 per cent in English 30, Biology 30 and Chemistry 20. Applicants also must be able to demonstrate a level 8 in the Canadian Language Benchmarks Assessment (available through SAIT). Basic CPR, a standard first aid certificate and updated immunization are required prior to the first practicum placement.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

(section revised JANUARY 2006)

Occupational therapist assistants are employed by:

- regional health authorities (hospitals, rehabilitation centres)
- schools
- home care programs
- continuing care centres
- mental health agencies and institutions
- vocational rehabilitation programs
- private practices.

Opportunities for advancement are limited.

Occupational therapist assistants are part of the larger National Occupational Classification 3414: Other Assisting Occupations in Support of Health Services. In Alberta, most people employed in this classification work in the following industries:

- **Retail Trade**
- **Health Care and Social Assistance.**

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 7,100 Albertans are employed in the Other Assisting Occupations in Support of Health Services occupational group which is expected to grow 2.0 to 3.0 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 140 to 220 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since occupational therapist assistants form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for occupational therapist assistants.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Other Assisting Occupations in Support of Health Services occupational group working part-time or full-time earned from **$11,900 to $58,200 a year.** The average salary was **$23,700 a year.**

For information about current collective agreements in the public and not-for-profit sectors, see the Health Sciences Association of Alberta (HSAA) website.

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Health Sciences Association of Alberta (HSAA) website: www.hsaa.ca

Therapist Assistant Association of Alberta (TAAA) website: www.thaaa.ca

Related Occupational Profiles

Chiropractic Assistant
Educational Assistant
Occupational Therapist
Ophthalmic Assistant
Physical Therapy Assistant
Recreation Co-ordinator/Supervisor
Rehabilitation Practitioner
Speech-Language Pathologist Assistant

Related High School Subjects

Community Health; Fashion Studies; Fine Arts (Music; and Visual Arts); Foods; Language Arts; Mathematics; Physical Education; and Science (Biology; and Chemistry)

Related Post-Secondary Fields of Study

Health Care and Medical Sciences

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Oceanographer

Produced OCTOBER 2005

Oceanographers study all aspects of oceans including their boundaries, contents and role in the earth's climate system.

NOC Number(s): 2113
Minimum Education: 6 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: I O D

Duties

Oceanographers work in a variety of fields such as:

- mining and petroleum production
- fisheries and food production
- ocean forecasting and climatology
- sea ice studies and ice forecasting
- transportation
- remote sensing
- ecology
- environmental studies
- climate studies and modelling
- recreation
- academic research
- national defence.

They may specialize in:

- **biological oceanography** - studying plant and animal life in the oceans including distribution, abundance, productivity, cycles and interdependence with the chemistry of the oceans. Practical applications of biological oceanography include marine ecology food production, fisheries management, environmental impact assessment and aquaculture (e.g. oyster, shrimp, salmon farming).
- **chemical oceanography** - studying the occurence and movement of chemicals in the ocean, the effects of contaminants on marine life and the chemical processes operating in the ocean, sea floor and marine atmosphere. Practical applications include pollution control, studies of the role of oceans in atmospheric chemistry and global climate change, and assessments of the quality of fish and fish products.
- **geological oceanography** - mapping the ocean floor, examining rocks, sediment, core samples and fossils, and conducting seismic surveys. Practical applications include offshore oil and gas exploration, sea-bed mining and coastal erosion or sediment accumulation.
- **physical oceanography** - studying the temperature and density of seawater, tides, waves, currents, ice conditions, ocean turbulence and sediment transport. Practical applications include charts of ocean properties (e.g. temperature, salinity, currents), forecasts of wave heights and distribution of marine polutants, and computer models of ocean climate (currents, temperature and density structure). Models of global ocean conditions assist in weather forecasting and predicting climate changes.

In general, oceanographers in all disciplines:

- plan and execute investigations
- record the details of experiments and expeditions
- develop and test theories and models
- prepare papers and reports
- respond to criticisms of their conclusions
- help establish policy on coastal and marine environments and resources, and manage related human activities.

Working Conditions

In the course of their work, oceanographers use surface ships, aircraft, satellites, underwater craft and a variety of specialized scientific equipment. Since field research is normally conducted from ocean-going vessels, field oceanographers may spend up to three months a year on ships. They may be expected to share a cabin with another person and may have to work long hours to complete research projects.

Physical requirements vary. When conducting field research, oceanographers may be required to lift items weighing over 25 kilograms. On the other hand, oceanographers who work primarily in office environments, concentrating on theoretical issues or computer modelling, may do minimal lifting.

Personal Characteristics

Oceanographers need the following characteristics:

- an inquiring mind and aptitude for the physical sciences
- analytical and problem-solving abilities
- the ability to apply theoretical concepts and analyze large volumes of information
- the ability to work alone or co-operatively as a member of a team
- the ability to express ideas clearly orally and in writing.

Field oceanographers should be physically fit and not be prone to severe sea sickness.

All oceanographers should enjoy co-ordinating information and solving problems, working with tools, instruments and equipment at tasks requiring precision, and consulting with others.

Educational Requirements

Oceanographers must have a **master of science (M.Sc.) or doctoral (PhD) degree in oceanography.** Graduates of bachelor of science (B.Sc.) degree programs may work as research/laboratory assistants/technicians who provide technical support.

The admission requirement for a M.Sc. degree program in oceanography is an acceptable average in either of the following:

- a B.Sc. degree program that includes course work in mathematics, physical sciences, chemistry, geology, biology or atmospheric sciences
- an engineering degree program with course work related to oceanography.

There are no Bachelor's degree programs in oceanography offered in Alberta but the **University of Alberta** in Edmonton, the **University of Calgary** and the **University of Lethbridge** do offer a variety of science and engineering degree programs that may include courses offered in conjuction with the University of British Columbia and Simon Fraser University at the Western Canadian Universities Marine Biological Station, Bamfield, Vancouver Island. Entrance requirements vary depending on the institution and program but generally include a competitive average in English Language Arts 30-1 or English 30, and four 30 level mathematics and science courses.

In western Canada, the following institutions offer programs in oceanography:

- The **University of British Columbia** in Vancouver offers programs leading to B.Sc., M.Sc. and PhD degrees in oceanography. The B.Sc. program is a combined honours program in oceanography and another science.
- The School of Earth and Ocean Studies at the **University of Victoria** offers a Bachelor of Science (B.Sc.) honours program with a combined major in physics and ocean sciences, and M.Sc. and PhD programs in earth and ocean sciences.

The University of Alberta offers graduate (master's and PhD) degree programs in physical oceanography. Elsewhere in Canada, **McGill University** in Montreal, **University of Quebec** in Rimouski (instruction in French), **Dalhousie University** in Halifax and **Memorial University of Newfoundland** in St. John's offer graduate degree programs in oceanography.

For current information about programs and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

(section revised JANUARY 2006)

Oceanographers are employed by:

- universities

- federal government laboratories
- private companies
- Canadian Defence Research establishments
- marine science institutions.

Some oceanographers work as private consultants. Most oceanographers are located in coastal cities. Experienced oceanographers may move into international positions (e.g. work for the United Nations as advisors or consultants).

Oceanographers also may work in related aspects of marine science such as aquaculture, environmental science, fisheries biology, marine biology and ecology, meteorology, hydrology, geophysics or ocean data management.

Oceanographers are part of the much larger National Occupational Classification 2113: Geologists, Geochemists and Geophysicists. In Alberta, most people employed in this classification work in the following industries:

- **Oil and Gas Extraction**
- **Professional and Technical Services**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

About 4,350 Albertans are employed in the Geologists, Geochemists and Geophysicists occupational group which is expected to grow 1.5 to 2.5 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 60 to 110 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since oceanographers form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for oceanographers.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Geologists, Geochemists and Geophysicists occupational group working part-time or full-time earned from **$37,900 to $159,600 a year.** The average salary was **$71,700 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Canadian Meteorological and Oceanographic Society (CMOS) website: www.cmos.ca

MareNet (Network of Marine Research Institutions and Documents) website: www.marenet.de/MareNet/

Related Occupational Profiles

Exploration Geophysicist
Geologist
Hydrologist
Meteorologist

Related High School Subjects

Energy and Mines; Information Processing; Language Arts; Mathematics; Physical Education; Science (Biology; Chemistry; and Physics); Social Studies; and Wildlife

Related Post-Secondary Fields of Study

Engineering, Architecture and Related Studies; Environment, Forestry and Related Studies; and Sciences

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Office Equipment Technician

Produced APRIL 2005

Office equipment technicians take apart, clean and repair business machines such as photocopiers, facsimile (fax) machines and laser printers.

NOC Number(s): 2242
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: O I M

Duties

Office equipment technicians may specialize in one type of machine or work on a variety of machines.

Technicians employed by **business machine manufacturers and dealers** typically service only the brands of equipment offered by their companies. They routinely visit customers who have service contracts to:

- inspect machines for unusual wear
- replace worn or broken parts
- trouble-shoot problems with equipment and networks
- advise customers on the proper use of the equipment and how to spot potential problems
- clean, oil and adjust machines to ensure optimum operation.

When breakdowns occur, office equipment technicians must respond quickly. They determine the cause of the malfunction and repair or replace the machine so the office routine is disrupted as little as possible.

Office equipment technicians employed by **small independent repair organizations** must be able to repair a number of different types of business machines. In general, they:

- take machines apart
- replace broken parts
- re-assemble machines
- make adjustments.

Working Conditions

Office equipment technicians often work in office environments where they are expected to wear business clothes. They use various electronic meters and other electrical testing equipment as well as hand tools such as pliers and screwdrivers. Travelling from one service call to another and some lifting (up to 10 kilograms) may be routinely required. There are few hazards in the occupation, although the work can be stressful when customers are impatient.

Office equipment technicians usually work standard office hours. Some technicians are required to be on call for after-hours emergency repairs. In some jobs, out-of-town travel is required.

Personal Characteristics

Office equipment technicians need the following characteristics:

- good manual dexterity
- mechanical and problem solving abilities
- the ability to see small, delicate parts
- the ability to detect small changes in colour
- good hearing to detect the sources of malfunctions.

Since technicians are often the only representatives of their companies that office personnel meet, they must have excellent communication and customer relations skills.

They should enjoy using tools, instruments and equipment to perform tasks requiring precision, analyzing information and diagnosing problems, and taking a methodical approach to their work.

Educational Requirements

Most office equipment technicians are **trained on the job.** However, employers generally prefer to hire people who already have:

- basic computer skills and a good understanding of electronic and electrical systems (i.e. graduates of electronics courses or programs, or people who have previous experience with electronics and mechanical repair)
- good customer service skills.

Some employers require employees to have a vehicle and a valid driver's licence. Employees who work on banking machines must be bondable (acceptable to an insurance company as a responsible, law-abiding person).

There are no post-secondary education programs specifically designed to train office machine technicians. For information about electronics-related programs in Alberta, see the Electronic Technician and Electronics Engineering Technologist occupational profiles.

Trainees employed by manufacturers or franchised dealers may be sent for special training programs or learn about equipment repair techniques via computer-based training packages. Those employed in repair shops learn from working with experienced office equipment technicians and may take self-study courses.

Once trained, office equipment technicians must continuously upgrade their skills and knowledge to keep up to date.

Employment and Advancement

(section revised JANUARY 2006)

Office machine technicians are employed by:

- firms that sell or service business machines
- equipment manufacturers
- independent repair shops
- organizations large enough to have on-staff maintenance and repair crews.

Experienced office equipment technicians may advance to supervisory, management or training positions, or open independent repair shops of their own.

Office equipment technicians are part of the much larger National Occupational Classification 2242: Electronic Service Technicians (Household and Business Equipment). In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Professional and Technical Services**
- **Management, Administrative and Other Support Services**
- **Repair, Maintenance, Personal and Other Services**
- **Retail Trade**
- **Wholesale Trade**
- **Educational Services**
- **Construction**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation**.

Over 10,650 Albertans are employed in the Electronic Service Technicians (Household and Business Equipment) occupational group which is expected to grow 1.9 to 2.9 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 200 to 310 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since office equipment technicians form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for office equipment technicians.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Salaries for office equipment technicians vary depending on the type of equipment they service. Hourly wages for **entry level** positions generally range from **$10 to $12 per hour (2005 estimate).**

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Electronic Service Technicians (Household and Business Equipment) occupational group working part-time or full-time earned from **$14,200 to $81,100 a year.** The average salary was **$44,200 a year.**

For more detailed information, see ASET's Annual Salary Surveys.

Other Sources of Information

Alberta Society of Engineering Technologists (ASET) website: www.aset.ab.ca

Related Occupational Profiles

Appliance Service Technician
Computer Service Technician
Electronic Technician
Vending Machine Repairer

Related High School Subjects

Electro-Technologies; Language Arts; Mechanics; and Physical Education

Related Post-Secondary Fields of Study

Engineering and Science Technologies; and Trades, Industrial and Related Training

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For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Oil and Gas Well Loggers and Testers

Produced AUGUST 2005

Oil and gas well loggers and testers operate specialized tools, instruments and equipment to provide services related to oil and gas well drilling, completion and servicing.

NOC Number(s): 8232.2
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: **O M i**

Duties

Oil and gas well loggers and testers, and their helpers, work in close co-operation with drilling and service rig crews. In general, loggers and testers:

- perform requested tests
- provide services designed to solve specific types of problems
- direct the related activities of helpers and drilling or service rig crew members.

Hydrocarbon mud loggers, also called hydrocarbon data analysts, analyze mud from the well to obtain information about rock formations. In general, they use instruments to:

- identify formation characteristics and qualities (from cuttings in the mud returning from down-hole drilling)
- determine whether or not traces of oil or gas are present in the mud
- analyze gases carried to the surface in drilling mud.

Mud logging results help to determine drill bit selection and drilling rates, and may indicate a need for core sampling or drill stem testing.

Coring operators take core samples that are analyzed by geologists, geophysicists and engineers to provide additional information about subsurface geology (to determine the potential productivity of a well). In general, coring operators:

- choose and deliver the special bits required to obtain core samples
- direct drillers in core sample operations
- box and record samples for the well site geologist or to send to the operating company or a laboratory for evaluation.

Drill stem testers perform tests on the fluid in rock formations to help determine the potential productivity of an oil or gas well. With assistance from their helpers, they:

- drive trucks with the testing equipment to and from drilling sites
- assemble and dismantle testing tools
- supervise the activities of rig crews who operate the rig equipment that lowers the testing tools into the well.

Drill stem testers who are also qualified to use equipment that pressure tests casing or tubing for leaks may be called pressure testers.

Wireline operators lower special instruments or tools into wells on a slender, flexible, metal cable called a wireline. They lower special instruments such as:

- complex electrical logging equipment
- perforating guns which, when detonated, perforate well casing and permit oil and gas to flow into the well
- special tools and equipment used to retrieve broken or lost drilling or production equipment.

In general, wireline operators:

- drive wireline trucks to and from drilling sites
- assemble and attach the special instruments or tools required for the job
- operate the winch from the truck to lower and raise the instruments or tools.

Precise positioning of the equipment is necessary to ensure that the job is done safely and properly. Wireline operators carefully follow the directions of field supervisors who work from mobile units that house complex computer equipment.

Working Conditions

Oil and gas well loggers and testers are usually on call 24 hours a day. They often work long hours and are always under pressure to complete their work so the rig can continue its regular activity. The work environment around a rig is noisy, dirty and hazardous. The work may require lifting tools and equipment weighing up to 25 kilograms.

Hydrocarbon mud loggers work primarily in small laboratories on site during drilling operations. Coring operators, drill stem testers and wireline operators work mostly outdoors, sometimes in adverse weather conditions.

Personal Characteristics

Oil and gas well loggers and testers need the following characteristics:

- physical strength and stamina
- good communication skills
- emotional stamina
- the ability to work well under pressure.

They should enjoy working with equipment and machinery, having clear rules and guidelines for their work, and compiling information and solving problems.

Educational Requirements

Most loggers and testers are **trained on the job**. There is no minimum education requirement but many employers prefer to hire high school graduates. Related courses (e.g. in math, chemistry, geology, electronics or mechanics) and experience working on drilling or service rigs are definite assets.

It is possible to gain technical knowledge and advance more quickly by taking courses in different aspects of drilling or service operations. **Enform** (formerly Petroleum Industry Training Service and Canadian Petroleum Safety Council) in Calgary and Nisku (near Edmonton) offers courses for those employed on drilling and service rigs as well as pre-employment courses for those wanting to gain experience prior to working in the oil and gas industry.

Wireline operators must:

- have a heavy truck driver's license (Alberta Class 3) and air brake certification
- be licensed by the provincial government before they are allowed to handle the types of explosives used in perforating activities
- be certified in the transportation of dangerous goods (TDG)
- be trained in first aid.

Employment and Advancement

(section revised JANUARY 2006)

Oil and gas well loggers and testers are employed by oil field service companies. New employees usually begin as helpers or junior operators and often are hired initially as seasonal workers for the winter months. Opportunities to advance to more senior positions depend on the company and the worker's ability and potential to assume responsibility and supervise operations. For more information, see the Well Testing Services Supervisor profile on the Trade Secrets website.

Wireline operators may develop special expertise in areas such as electrical logging or perforating, or they may move into field stations and work as mechanics. Advancement to a wireline field supervisor position requires additional education (for more information, see the Wireline Field Supervisor occupational profile).

Oil and gas well loggers and testers are part of the larger National Occupational Classification 8232: Oil and Gas Well Drillers, Servicers, Testers and Related Workers. In Alberta, most people employed in this classification work in the **Oil and Gas Extraction** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Oil and Gas Extraction industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 17,600 Albertans are employed in the Oil and Gas Well Drillers, Servicers, Testers and Related Workers occupational group which is expected to grow 2.5 to 3.5 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 440 to 620 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since oil and gas well loggers and testers form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for oil and gas well loggers and testers.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Salaries for loggers and testers vary greatly depending on their specialty and the individual's experience and level of training. Salaries usually include a base rate plus field bonus.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Oil and Gas Well Drillers, Servicers, Testers and Related Workers occupational group working part-time or full-time earned from **$17,800 to $157,000 a year.** The average salary was **$55,100 a year.**

Other Sources of Information

Canadian Association of Geophysical Contractors (CAGC) website: www.cagc.ca

Canadian Association of Oilwell Drilling Contractors (CAODC) website: www.caodc.ca

Canadian Well Logging Society (CWLS) website: www.cwls.org

Enform (formerly Petroleum Industry Training Service and Canadian Petroleum Safety Council) website: www.enform.ca

Small Explorers and Producers Association of Canada (SEPAC) website: www.sepac.ca

Related Occupational Profiles

Drilling and Service Rig Managers
Drilling Rig Leasehand/Floorhand
Rig Technician
Service Rig Personnel
Well Service Equipment Operator
Wireline Field Supervisor

Related High School Subjects

Community Health; Electro-Technologies; Energy and Mines; Language Arts; Mathematics; Mechanics; Physical Education; and Science (Chemistry; and Physics)

Related Post-Secondary Fields of Study

Driver Training; and Trades, Industrial and Related Training

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Oil Pipeline Operators and Maintenance Workers

Produced AUGUST 2005

Oil pipeline operators and maintenance workers monitor and conduct the day to day operations of oil pipelines and associated facilities.

NOC Number(s): 9232
Minimum Education: High school diploma
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: **O I d**

Duties

Oil pipeline operators and maintenance workers ensure that pipeline systems operate safely, efficiently and reliably. Pipeline systems transport oil and oil products via:

- flow lines that connect oil wells to oil batteries (storage facilities)
- pipeline gathering systems that connect production fields to main pipelines
- main pipeline transmission lines that carry oil from major points of production to refineries or to other markets.

Workers' responsibilities vary from one company to another. In general, however, oil pipeline maintenance workers:

- check the equipment (pumps, motors, valves, traps) at pumping stations and related sites
- co-ordinate operations with control centre operators
- monitor the quality of the products shipped
- make adjustments to the equipment
- respond to problems when they occur along the pipeline system.

Although their overall duties are similar, different types of oil pipeline maintenance workers have different levels of responsibility.

In some companies, **tank farm operators** are employed at pumping stations, usually located near tank farms (large storage facilities for oil and oil products). From control rooms, they:

- monitor instruments that provide information about product levels in storage tanks and the flow rates, pressures, volumes, densities and temperatures of products being shipped
- operate computers that remotely control valves, product separation and pumps
- direct the work of gaugers and utility workers (described below)
- monitor the work of contract personnel while at the tank farm and pumping station
- check various areas of the pumping station to ensure proper and safe operation
- may check remote pumping stations.

Tank farm operators report directly to station supervisors and are expected to assume supervisory responsibilities when station supervisors are absent.

In other companies, **control centre operators** monitor and control pipeline activities for large regions (e.g. all of Alberta and British Columbia) from one centralized control centre. From control rooms, they:

- monitor operations including flow and product quality measures, storage levels, line balance and leak detection
- operate control valves, block valves, product separation and pumps
- provide information to gaugers, maintenance and other personnel.

Other pipeline workers, often called gaugers and utility workers, may work at pumping stations. In general, **gaugers:**

- make routine checks of the pumping station or remote stations
- take readings and make necessary adjustments
- keep detailed records of oil flow, temperature, density and pressure in the pipeline
- take samples of crude to evaluate quality
- take precise readings from meters
- send and receive pipeline scrapers

- maintain equipment
- determine month end tank inventories
- may prepare calculations for receipts and deliveries of oil and oil products.

Under direct supervision, gaugers also may:

- route the correct product to the pumps from the tanks
- check to see that incoming and outgoing products are moving through the correct meters and that meters are working properly
- take samples of various products
- conduct simple laboratory tests to check product quality and grade.

Utility workers work closely with gaugers and assist them with their work. As they gain experience, utility workers are usually given more responsibility and, after two or three years, may advance to gauger positions. In addition to their work with gaugers, utility workers are responsible for general maintenance, housekeeping in the pumping station (washing walls, cleaning floors) and general site safety.

Working Conditions

Pipeline systems operate 24 hours a day, year round, so control centre operators may work eight or 12 hour shifts. They usually work in an office type of environment. Other workers may work eight hour day shifts.

Utility workers and gaugers work both indoors and outdoors in all types of weather conditions. They are required to lift items weighing up to 25 kilograms.

All pumping station personnel must be acquainted with safety procedures associated with handling oil and oil products.

Personal Characteristics

Oil pipeline operators and maintenance workers need the following characteristics:

- precise
- flexible
- good communication skills
- able to work effectively as a member of a team.

In an emergency, oil pipeline operators must be able to evaluate the situation and respond to it quickly and correctly. The safety of a number of people and the efficient operation of the oil pipeline system often depend on their good judgement. Control centre operators also need good colour vision to interpret colour computer graphics.

Oil pipeline operators and maintenance workers should enjoy controlling equipment, instruments and machinery, analyzing information to solve problems, and working with others.

Educational Requirements

Oil pipeline operators and maintenance workers usually require at least a high school education and a valid driver's license. Employers prefer to hire applicants who have related post-secondary education/training or experience in:

- safety, first aid and CPR
- WHMIS (Workplace Hazardous Materials Information System)
- mechanics
- electrical work
- basic electronics/instrumentation
- power engineering
- chemical engineering technology
- petroleum engineering technology
- mechanical engineering technology.

For information about related post-secondary programs, see the Power Engineer, Chemical Engineering Technologist, Petroleum Engineering Technologist and Mechanical Engineering Technologist occupational profiles.

Employers generally provide in-house training programs for new employees and ongoing courses for experienced employees.

Employment and Advancement

(section revised JANUARY 2006)

Specialized oil pipeline companies and some integrated oil and gas companies operate pipelines. Job applicants usually approach these companies directly for information on employment opportunities in pumping station operations.

Inexperienced individuals often start as summer help or utility workers and, with experience, advance to gauger positions. Gaugers may become tank farm operators and station supervisors. Additional courses and technical school programs are often required to move into electronics, control centre operations or mechanical maintenance positions.

Oil pipeline operators and maintenance workers are part of the larger National Occupational Classification 9232: Petroleum, Gas and Chemical Process Operators. In Alberta, over 75 per cent of people employed in this classification work in the **Oil and Gas Extraction** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Oil and Gas Extraction industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 7,000 Albertans are employed in the Petroleum, Gas and Chemical Process Operators occupational group, which is expected to grow 2.2 to 3.2 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 150 to 230 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since oil pipeline operators and maintenance workers form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for oil pipeline operators and maintenance workers.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Petroleum, Gas and Chemical Process Operators occupational group working part-time or full-time earned from **$35,400 to $115,000 a year.** The average salary was **$77,900 a year.**

Related Occupational Profiles

Field Production Operator
Gas Pipeline Operators and Maintenance Workers
Refinery/Upgrader Process Operator

Related High School Subjects

Community Health; Electro-Technologies; Energy and Mines; Language Arts; Mathematics; Mechanics; Physical Education; and Science (Chemistry; and Physics)

Related Post-Secondary Fields of Study

Engineering and Science Technologies; and Trades, Industrial and Related Training

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Operations Manager

Produced JANUARY 2006

Operations managers direct and co-ordinate the operation of manufacturing, service delivery and production departments in industrial, commercial and government organizations.

NOC Number(s): 0911
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **D I M**

Duties

Operations managers oversee the activities in an organization that are directly related to making a product or providing a service. In other words, they oversee how people, materials, equipment, energy, money and information inputs are converted into useful goods and services.

In general, operations managers:

- analyze, design and improve the processes by which goods and services are produced
- implement and manage quality assurance programs
- forecast future demand for goods and services
- recommend locations for facilities such as plants, warehouses and service units
- plan the layout of facilities
- measure and improve productivity
- manage materials including purchasing, inventory control and distribution
- manage logistics and supply chains (the movement of goods into and out of production, distribution and retail facilities)
- manage the work force (for example, plan work schedules to meet projected demands for goods and services).

Working Conditions

Operations managers usually work standard office hours but overtime may be required when an organization makes significant changes to its operations. Some travel may be required, particularly in organizations with many facilities.

Personal Characteristics

Operations managers need the following characteristics:

- good oral and written communication skills
- the ability to motivate, lead and manage employees
- a commitment to customer satisfaction.

They should enjoy:

- directing the work of others
- negotiating with other managers to find innovative solutions to problems
- taking a methodical approach to their work.

Educational Requirements

There is no standard educational requirement to become an operations manager but a degree or post-secondary diploma in business or engineering is recommended. Employers in particular industries may require specialized courses or related experience.

In Alberta, post-secondary institutions throughout the province offer management and engineering programs (for more information, see related profiles such as Industrial Engineer, Industrial Engineering Technologist and Marketing Manager). The following institutions offer programs with specializations in operations or supply chain management:

- **Grant MacEwan College** in Edmonton offers a four year Applied Bachelor's degree program in International Business and Supply Chain Management that includes a one year practicum. The entrance requirement is a high school diploma with a 65 per cent average in English Language Arts 30-1 (or English 30), Pure Math 30 (or Math 30 or equivalent), a 30 level science course, Social Studies 30 or a 30 level language other than English, and one other course selected from approved lists. The College also offers a two year Logistics Management diploma program.
- **Mount Royal College** in Calgary offers a four year Applied Bachelor's degree program in International Business and Supply Chain Management. The entrance requirement is a 60 per cent average in English Language Arts 30-1 (or English 30), Pure Math 30 (or Math 30) and three other Grade 12 subjects. The College also offers a Supply Chain Management certificate program through Continuing Education.
- The **Northern Alberta Institute of Technology (NAIT)** in Edmonton offers an 11 course Operations Management program through Continuing Education.
- The **University of Alberta** in Edmonton offers four and five year (co-op) Bachelor of Commerce degree programs with specializations in operations management and distribution management. The entrance requirements are a competitive average in English Language Arts 30-1 (or English 30), Pure Math 30 (or Math 30), a 30 level science and two other approved Grade 12 subjects, and completion of one pre-professional year.
- The **University of Calgary** offers four year and five year (co-op) Bachelor of Commerce degree programs with concentrations in operations management. The entrance requirement is a high school diploma or equivalent with a competitive average in English Language Arts 30-1 (or English 30), Pure Math 30 (or Math 30) and three of the following: Math 31, Social Studies 30, Biology 30, Chemistry 30, Physics 30, Science 30, a 30 level language other than English, one five-credit Grade 12 subject.

Post-secondary institutions throughout the province offer university transfer programs that allow students to apply up to two years of study toward university bachelor's degree programs. It is the student's responsibility to ensure that the courses they choose to take will be accepted for credit at the institution to which they wish to transfer.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Other Requirements

APICS - The Educational Society for Resource Management awards the designation CPIM (Certified in Production and Inventory Management) to those who have successfully completed five courses, or CIRM (Certified in Integrated Resource Management) to those who have successfully completed five practitioner courses. The required courses are offered through post-secondary institutions.

Employment and Advancement

Operations managers work in advisory and management positions with:

- consulting firms
- manufacturers
- transportation companies
- distribution organizations
- service institutions.

Experienced operations managers may advance to senior management positions.

Operations managers are part of the larger National Occupational Classification 0911: Manufacturing Managers. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Other Manufacturing**
- **Metals, Metal Fabrication and Machinery Manufacturing**
- **Food and Beverage Products Manufacturing**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)

- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 5,100 Albertans are employed in the Manufacturing Managers occupational group which is expected to grow 1.0 to 2.0 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 50 to 110 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since operations managers form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for operations managers.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Salaries for operations managers depend on the size and nature of the organization, the responsibilities of the position and the qualifications of the operations manager.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Manufacturing Managers occupational group working part-time or full-time earned from **$13,000 to $208,900 a year.** The average salary was **$69,900 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

APICS - The Educational Society for Resource Management main website: www.apics.org

APICS Region VIII, Calgary Chapter website: www.apics-calgary.org

Careers in Transportation website: www.transpocity.ca

Related Occupational Profiles

Industrial Engineer
Management Consultant
Manufacturing Engineer
Operations Research Analyst
Traffic Manager

Related High School Subjects

Enterprise and Innovation; Information Processing; Language Arts; Logistics; Management and Marketing; Mathematics; Science; and Social Studies

Related Post-Secondary Fields of Study

Business, Management and Administrative Studies; and Engineering, Architecture and Related Studies

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For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Operations Research Analyst

Produced JANUARY 2006

Operations research analysts use mathematical modelling and information technology to develop decision support systems for decision-makers in public and private organizations.

NOC Number(s): 2161.2
Minimum Education: 4 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: I M D

Duties

Operations research analysts use analytical methods, mathematical modelling techniques and information technology to predict system performance and compare the outcomes of alternative strategies or ways of managing complex systems.

Operations research analysis can be applied to a wide variety of management problems. For example, it may be used by:

- emergency medical services to plan the deployment of ambulances
- governments to analyze the flow of patients through a health care system
- hospitals to design blood banking systems or schedule staff and operating rooms
- police departments to devise shift schedules that minimize response time and meet budget and human resource needs
- municipalities to decide where a hazardous waste facility should be located
- railway companies to schedule and optimize the use of rolling stock
- airlines to develop pricing strategies, schedule crews and aircraft, and develop disaster recovery plans
- manufacturing companies to design or increase the efficiency of production systems
- oil companies to evaluate prospective oil or gas projects
- forestry companies to help decide how to manage large tracts of forest land
- investment firms to manage risk and optimize portfolios.

In general, operations research analysts:

- meet with decision makers to identify problems and clarify management objectives
- observe the current system in operation, if necessary and possible
- manage and analyze large amounts of data that describe how systems operate and perform
- use scientific methods to develop mathematical models that can be used to predict how systems will behave if different courses of action are taken
- use computers to develop and run models and investigate the merits of alternate courses of action.

Sometimes, operations research analysts work as part of interdisciplinary teams that include such diverse professionals as economists, engineers and managers.

Working Conditions

Operations research analysts usually work in an office environment in large organizations or consulting firms. Since the work is project oriented, some overtime may be required to meet project deadlines. However, hours of work are often flexible. Some travel may be required to study systems in operation.

Personal Characteristics

Operations research analysts need the following characteristics:

- good mathematical ability
- good spatial perception
- good communication skills including listening and public speaking skills.

They should enjoy synthesizing information to develop innovative solutions to complex problems, applying statistical theory and mathematical techniques, and advising others.

Educational Requirements

The minimum academic requirement to become an operations research analyst is a bachelor's degree specializing in industrial engineering, management science or quantitative analysis. Computer skills related to data analysis and mathematical or statistical modelling are required. Those who have a related master's degree have a definite advantage when seeking employment.

In Alberta, the following institutions offer directly related degree programs:

- The **University of Alberta** in Edmonton offers four year and five year co-operative education Bachelor of Commerce degree programs with specializations in operations management, distribution management, and decision and information systems. The entrance requirements are a competitive average in English Language Arts 30-1 (or English 30), Pure Math 30 (or Math 30), a 30 level science and two other approved Grade 12 subjects, and completion of one pre-professional year with a competitive average in math, economics and English courses. The University of Alberta also offers a Master of Business Administration (MBA) degree program and a doctoral (PhD) degree program with a concentration in management science.
- The **University of Calgary** offers four year and five year co-operative education Bachelor of Commerce degree programs in Management Information Systems. The entrance requirement is a high school diploma with a competitive average in English Language Arts 30-1 (or English 30), Pure Math 30 (or Math 30) and three of the following: Math 31, Social Studies 30, Biology 30, Chemistry 30, Physics 30, Science 30, a 30 level language other than English, one five-credit Grade 12 subject.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

In collaboration with several Canadian universities, the **Canadian Operational Research Society (CORS)** offers a diploma to members who have completed post-secondary studies that cover operational research techniques, probability and statistics, computers and systems, and applications of operational research.

Employment and Advancement

Most operations research analysts are employed in the head offices of large process, manufacturing and service firms. Some are employed by:

- consulting firms
- universities
- government departments.

Entry level operations research analysts start working on well-defined problems and progress to less clear-cut problems. Experienced analysts may start their own consulting businesses or move into other management positions.

Operations research analysts are part of the larger National Occupational Classification 2161: Mathematicians, Statisticians and Actuaries. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Professional and Technical Services**
- **Public Administration**
- **Finance, Insurance and Real Estate**
- **Educational Services**
- **Food and Beverage Products Manufacturing**
- **Retail Trade**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Employment demand specifically for operations research analysts has been relatively limited in Alberta but changes in computer technology (for example, reasonably priced, user friendly spreadsheet tools for operations research) are making operations research more accessible to smaller organizations.

Over 450 Albertans are employed in the Mathematicians, Statisticians and Actuaries occupational group which is expected to grow 1.5 to 2.5 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover. (**Note**: Since operations research analysts form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for operations research analysts.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Starting salaries for operations research analysts vary according to the employee's qualifications and the nature of the position.

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Canadian Operational Research Society website: www.cors.ca

Related Occupational Profiles

Actuary
Demographer
Financial Analyst
Industrial Engineer
Management Consultant
Manufacturing Engineer
Mathematician
Operations Manager
Statistician

Related High School Subjects

Information Processing; Language Arts; Logistics; Management and Marketing; Mathematics; Science; and Social Studies

Related Post-Secondary Fields of Study

Business, Management and Administrative Studies; Computer and Information Technology; Engineering, Architecture and Related Studies; and Mathematics

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For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Ophthalmic Assistant

Produced JANUARY 2005

Ophthalmic assistants assist ophthalmologists (eye surgeons) with patient care.

NOC Number(s): 3235.5
Minimum Education: High school diploma
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **M S O**

Duties

Depending on the work setting and the level of responsibility delegated by the ophthalmologist, ophthalmic assistants may:

- operate testing and measuring instruments to assess patient vision (including peripheral fields of vision)
- record test results and case histories
- assist ophthalmologists in office surgery
- maintain sterile equipment in the office
- administer eye drops, ointments and medications as directed by physicians
- assist in fitting contact lenses
- conduct tests designed to detect eye diseases
- educate patients by explaining physicians' instructions (e.g. about home care or contact lens use).

Working Conditions

Ophthalmic assistants work in office or clinical settings. They work the same hours as ophthalmologists which may include weekdays, evenings and weekends.

Personal Characteristics

Ophthalmic assistants need the following characteristics:

- patience and a courteous, pleasant manner
- the ability to interact confidently and reassuringly with patients
- curiosity about and interest in medical science
- the ability to maintain patient confidentiality
- a reasonable level of manual dexterity and visual acuity
- good organizational skills
- good oral and written communication skills.

They should enjoy compiling and recording information accurately, working with people, and operating testing and measuring instruments and equipment.

Educational Requirements

In Alberta, most ophthalmic assistants have been **trained on the job**. Ophthalmologists generally prefer to hire applicants who have:

- computer skills
- a background in medical terminology
- a strong background in math and sciences
- a valid CPR Basic Rescuer certificate.

The Canadian Medical Association's cojoint accreditation process assesses education programs in 14 health science professions to ensure national standards are met. A list of approved Ophthalmic Medical Technician/Technologist education programs is published on the Joint Commission on Allied Health Personnel in Ophthalmology (JCAHPO) website.

Other Requirements

Certification is not mandatory for ophthalmic assistants in Alberta but employers may prefer to hire job applicants who have been certified by JCAHPO.

Employment and Advancement

(section revised JANUARY 2006)

Ophthalmic assistants are employed in:

- hospitals
- clinics
- private ophthalmologists' offices.

Advancement generally takes the form of more complex responsibilities. In larger organizations, ophthalmic assistants may advance to ophthalmic technician and ophthalmic technologist positions.

Ophthalmic assistants are part of the larger National Occupational Classification 3235: Other Technical Occupations in Therapy and Assessment. In Alberta, most people employed in this classification work in the **Health Care and Social Assistance** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Health Care and Social Assistance industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 1,900 Albertans are employed in the Other Technical Occupations in Therapy and Assessment occupational group which is expected to grow 1.8 to 2.8 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 30 to 60 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since ophthalmic assistants form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for opthalmic assistants.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Salaries vary depending on work setting, level of responsibility, education and experience. In general, ophthalmic assistants earn from **$25,000 to $50,000 per year (2005 estimate).**

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Other Technical Occupations in Therapy and Assessment occupational group working part-time or full-time earned from **$11,900 to $85,100 a year.** The average salary was **$30,600 a year.**

Other Sources of Information

Canadian Ophthamological Society (COS) website: www.eyesite.ca

Joint Commission on Allied Health Personnel in Opthalmology (JCAHPO) website: www.jcahpo.org

Related Occupational Profiles

Dental Assistant
Hearing Aid Practitioner
Occupational Therapist Assistant
Optical Technician
Optician
Optometrist
Pharmacy Assistant/Technician
Physical Therapy Assistant
Speech-Language Pathologist Assistant

Related High School Subjects

Community Health; Information Processing; Language Arts; Mathematics; and Science (Biology; Chemistry; and Physics)

Related Post-Secondary Fields of Study

Health Care and Medical Sciences

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Optical Technician

Produced FEBRUARY 2005

Optical technicians manufacture, assemble and repair eyeglasses according to prescriptions from optometrists or ophthalmologists.

NOC Number(s): 3414.3
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: O M i

Duties

Optical technicians work in optical laboratories where they:

- cut, grind and polish lenses to precise measurements
- assemble eyeglass frames
- fit lenses into frames
- make minor adjustments.

For information about working directly with customers, see the Optician occupational profile.

Optical technicians may specialize in the surfacing or finishing phases of the lens manufacturing process. Surfacing includes:

- selecting and marking a blank lens to indicate required curvatures
- fastening the blank lens to a metal object for support during grinding and polishing
- generating the curve
- grinding and polishing lens surfaces to the prescribed specifications.

Finishing involves:

- measuring the lens power
- cutting lenses to the size and shape required to fit specified frames
- edging and bevelling lenses
- drilling lenses
- assembling eyeglasses.

Some optical technicians work in specialized contact lens laboratories where they manufacture contact lenses according to prescription.

Working Conditions

Optical technicians work in pleasant, clean laboratories. The work is not physically demanding but may require being on your feet much of the day. The only occupational hazard is the possibility of allergic reactions to chemical agents used in an optical laboratory. Having to prepare lenses in a limited amount of time can be stressful.

Optical technicians work a standard 40 hour week with some evening and weekend work required for those employed in quick service and retail optical dispensing businesses.

Personal Characteristics

Optical technicians need the following characteristics:

- good motor co-ordination, manual dexterity and finger dexterity
- mechanical ability
- patience and perseverance
- the ability to pay close attention to details
- the ability to work well in a team environment.

They should enjoy operating equipment and using hand tools, having clear guidelines and organized methods for their work, and making minor adjustments and repairs.

Educational Requirements

In Alberta, optical technicians are **trained on the job** in optical prescription laboratories. There are no standard education requirements but a high school diploma or a background in mathematics and science is an asset. Many employers look primarily for evidence that a job applicant has a keen mind and an interest in the field.

Employment and Advancement

(section revised JANUARY 2006)

Many optical technicians are employed by large full service laboratories, where they specialize in particular types of tasks. Other technicians work in smaller surfacing or edging laboratories associated with optical dispensing businesses or optometrists' practices.

Trainees may start work in the stock room of an optical laboratory before progressing to surfacing or finishing operations. After about three months at a particular task, trainees move to another task. It takes about three years for trainees to become sufficiently skilled to work unsupervised in either surfacing or finishing.

Experienced optical technicians may advance to supervisory positions in laboratories or move into related fields such as selling safety programs to industry, or selling and repairing optometric diagnostic instruments. Some technicians continue to study to become a dispensing optician (see the Optician profile), although there is a trend toward training specifically for one occupation or the other.

Optical technicians are part of the larger National Occupational Classification 3414: Other Assisting Occupations in Support of Health Services. In Alberta, most people employed in this classification work in the following industries:

- **Retail Trade**
- **Health Care and Social Assistance.**

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 7,100 Albertans are employed in the Other Assisting Occupations in Support of Health Services occupational group which is expected to grow 2.0 to 3.0 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 140 to 220 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since optical technicians form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for optical technicians.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Salaries for optical technicians vary greatly depending on the size of the laboratory. In the initial stages of training, hourly wages may be low. However, wages increase as technicians progress through their training and gain more experience.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Other Assisting Occupations in Support of Health Services occupational group working part-time or full-time earned from **$11,900 to $58,200 a year.** The average salary was **$23,700 a year.**

Other Sources of Information

Alberta Opticians Association (AOA) website: www.albertaopticians.org

Opticians Association of Canada (OAC) website: www.opticians.ca

Related Occupational Profiles

Electronics Assemblers and Fabricators
Hearing Aid Practitioner
Ophthalmic Assistant
Optician
Optometrist

Related High School Subjects

Language Arts; Mathematics; and Science (Physics)

Related Post-Secondary Fields of Study

Trades, Industrial and Related Training

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Optician

Produced FEBRUARY 2005

Opticians fit and adapt eye glasses, contact lenses, low vision aids and other optical appliances according to prescriptions.

NOC Number(s): 3231
Minimum Education: High school diploma
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: O M S

Duties

Opticians work in a retail environment dispensing glasses from written prescriptions or by duplicating existing eyewear. In general, they:

- analyze and interpret prescriptions
- help customers select frames of the most suitable size and shape based on prescription and anatomical considerations
- advise customers regarding lens and frame types
- provide basic eye health and vision screening, and referrals to appropriate health care professionals when necessary
- take measurements to determine the size, shape and specifications for lenses, frames and lens forms
- prepare work orders for optical technicians who grind lenses
- assemble eye glasses
- verify that completed eye glasses or lenses fit and are manufactured to the required specifications
- make appropriate adjustments to ensure customer comfort
- fit and dispense low vision appliances
- promote eye health and the correct use of ophthalmic appliances by educating consumers
- conduct or collaborate in optical related research.

They also may:

- arrange and maintain displays of optical merchandise
- supervise the training of student opticians
- purchase supplies or perform related accounting duties.

Working Conditions

Opticians are on their feet for much of their working day. They may operate their own independent business, or they may work in retail outlets or for optometrists or ophthalmologists. Those working in retail stores may be required to work some evenings and weekends.

Personal Characteristics

Opticians need the following characteristics:

- a courteous, pleasant manner
- good communication skills
- critical thinking and conflict resolution skills
- the ability to analyze and interpret customer issues
- the ability to pay close attention to details
- a good sense of spatial relationships
- the finger dexterity required to manipulate small objects and instruments.

They should enjoy dealing with people, operating optical devices, and compiling and checking information.

Educational Requirements

In Alberta, opticians are trained through **a combination of on-the-job training and technical courses.**

The **Northern Alberta Institute of Technology (NAIT)** in Edmonton offers a two year independent study Ophthalmic Dispensing - Glasses certificate program. This program is offered through Continuing Education. Applicants must:

- have a high school diploma or equivalent with Pure or Applied Math 30 or equivalent (Physics 30 is recommended)
- be employed full-time with a certified optician or optometrist.

During the program, trainees participate in evening lectures and labs, and complete independent study projects while working in an optical dispensary or for an optometrist or ophthalmologist.

NAIT also offers a two year independent study Ophthalmic Dispensing - Contact Lenses advanced practice certificate program through Continuing Education. Applicants must be registered eyeglass opticians.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Other Requirements

Under Alberta's Opticians Act and Ophthalmic Dispensing Regulation, only registered members of the Alberta Opticians Association (AOA) may call themselves or practice as an Optician.

Employment and Advancement

(section revised JANUARY 2006)

Opticians may be employees or independent owners of retail optical services. Some opticians work in association with ophthalmologists, optometrists or a group of optical practitioners.

Most opticians work in the **Retail Trade** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Retail Trade industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 600 Albertans are employed in the Opticians occupational group which is expected to grow 1.1 to 2.1 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover.

This occupation generally has a high turnover rate and employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Salaries vary considerably depending on the company and the opticians' skills. Some opticians are paid commissions on the sale of optical devices.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Opticians occupational group working part-time or full-time earned from **$13,300 to $46,600 a year.** The average salary was **$23,000 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Opticians Association (AOA) website: www.albertaopticians.org

Opticians Association of Canada (OAC) website: www.opticians.ca

Related Occupational Profiles

Hearing Aid Practitioner
Ophthalmic Assistant
Optical Technician
Optometrist
Retail Salesperson

Related High School Subjects

Language Arts; Mathematics; and Science (Physics)

Related Post-Secondary Fields of Study

Personal and Food Services

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Optometrist

Produced JANUARY 2005

Optometrists examine patients' eyes, diagnose diseases and disorders of the eye and associated structures, prescribe and dispense eyeglasses and contact lenses, prescribe therapeutic drugs and recommend appropriate treatments.

NOC Number(s): 3121
Minimum Education: 6 years post-secondary education/training
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: **O S D**

Duties

In general, optometrists:

- measure the eye and visual function
- prescribe and dispense eyeglasses and contact lenses
- diagnose diseases and disorders of vision
- remove non-penetrating foreign bodies (e.g. metal) from the eye
- prescribe eye exercises to achieve accurate and comfortable vision
- undertake rehabilitative intervention for low vision
- treat certain eye conditions with therapeutic drugs
- educate and counsel patients about contact lens care, appropriate lighting and sunglasses or tints, and eye safety at home and in the workplace
- refer patients, when appropriate, to ophthamologists (e.g. for cataracts or a detached retina) or family physicians (e.g. for headaches that are not eye-related, or signs of high cholesterol, high blood pressure or diabetes)
- treat glaucoma in co-management arrangements with ophthalmologists
- act as consultants to other health care providers
- provide teachers, physiotherapists, occupational therapists, school psychologists and other professionals with eye health information on their clients or students.

Working Conditions

Optometrists usually work with receptionists, ophthalmic assistants and opticians, who may complete supervised pre-testing procedures. Most of their working time is spent in office environments with artificial lighting.

Optometrists are usually self-employed and therefore can determine their working hours. Some work evenings and weekends to accommodate patients. With an established practice, optometrists tend to stay in the same locality for the duration of their careers.

Personal Characteristics

Optometrists need the following characteristics:

- the learning ability required to complete the academic requirements
- good communication skills
- a compationate personality
- the spatial and form perception required to interpret test results and identify visual defects.

They should enjoy operating specialized instruments, working with people and analyzing information to make decisions.

Educational Requirements

The academic training required takes **at least six years** to complete.

In Canada, two institutions offer four year Doctor of Optometry degree programs:

- The **University of Waterloo** in Ontario offers an optometry degree program in English. The entrance requirement is at least two years of a university science program with an average of at least 75 per cent (3.0/4.0 grade point average) in the following pre-requisites: biology, physics, chemistry, calculus, psychology, English, physiology, linear algebra or geometry and trigonometry, introductory ethics, organic chemistry, microbiology, biochemistry and statistics. Courses in human anatomy, embryology, genetics and histology are recommended. In 2004, there were 250 applicants for 75 spaces in this program.
- The **University of Montreal** in Quebec offers an optometry degree program in French. Entrance requirements are similar to those for the University of Waterloo program.

A number of universities and colleges in Alberta offer university science degree programs and courses which will satisfy entrance requirements for Optometry. Entrance requirements for these programs vary but, in general, include a high school diploma with an average of at least 60 per cent (some programs require at least 70 per cent) in English 30-1, Pure Math 30, Biology 30, Chemistry 30 and Physics 30. A higher average is required for admission to some programs.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Other Requirements

Under Alberta's Health Professions Act and Optometrists Profession Regulation, registration with the Alberta College of Optometrists (ACO) is mandatory if you meet identified competency requirements and provide professional services directly to the public, teach the practice of the profession to members or students of the profession, or supervise registered members who provide services to the public. Registered members who are authorized by the College perform restricted activities specified in the Regulation. Only registered members may call themselves Optometrists.

Employment and Advancement

(section revised JANUARY 2006)

After graduation, an optometrist may:

- go directly into private practice by starting up a practice where there is a need for one or by purchasing an established practice.
- join another practitioner or group of practitioners in a busy practice. (Through this type of association, it may be possible to eventually become a partner or owner, or to obtain sufficient capital to establish one's own practice.)
- work with an ophthalmologist providing pre and post operative eye care.

In addition to offering regular optometric services, optometrists may become involved in areas of public health such as:

- advising parents about potential eye hazards for children
- diagnosing perceptual handicaps which hinder learning in school-age children
- consulting with industrial safety personnel on the selection and placement of employees
- fitting low vision patients whose vision can only be improved through the use of special magnifying devices.

Optometrists who continue their education beyond the Doctor of Optometry degree may move into research, teaching or industrial applications of vision science.

In Alberta, most people employed as optometrists work in the **Health Care and Social Assistance** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Health Care and Social Assistance industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

About 450 Albertans are employed in the Optometrists occupational group which is expected to grow 2.5 to 3.5 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 10 to 20 **new** positions will be created each year **in addition** to job openings created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

For the first few years, income levels may be relatively low for optometrists who start private practices. However, after five years, their incomes often exceed the incomes of optometrists who are employed by others. Further income increases depend on the optometrist's ability, time and desire to serve a growing number of patients.

In general, optometrists' incomes compare favourably with those of other health professionals.

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

Alberta Association of Optometrists website: www.optometrists.ab.ca

Alberta College of Optometrists website: collegeofoptometrists.ab.ca

Canadian Association of Optometrists website: www.opto.ca

Related Occupational Profiles

Chiropractor
Dentist
Naturopathic Doctor
Ophthalmic Assistant
Optical Technician
Optician
Physician
Podiatrist

Related High School Subjects

Community Health; Financial Management; Language Arts; Management and Marketing; Mathematics; Science (Biology; and Physics); and Social Studies

Related Post-Secondary Fields of Study

Health Care and Medical Sciences

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Orchestra/Band Conductor

Produced MAY 2003

Orchestra and band conductors produce their own interpretations of musical works by directing performers in musical groups such as chamber orchestras, wind ensembles, concert bands, symphony orchestras, jazz bands and orchestras for ballet and opera performances.

NOC Number(s): 5132.1
Minimum Education: 4 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **D I M**

Duties

In general, orchestra and band conductors:

- select music that is appropriate to the talents, abilities and strengths of the group
- study musical scores to learn the music in detail and develop a particular interpretation of the music
- use gestures to shape the music (develop colour, tone, volume, pitch and desired quality) and to keep the musicians in time
- audition instrumentalists to select musicians for their group
- schedule, prepare for and direct rehearsals.

Occasionally, they may also:

- meet with composers to discuss interpretations of their work
- perform administrative duties such as scheduling performances, organizing tours and negotiating recording contracts
- work with music librarians to ensure that musical scores are available
- conduct guest soloists in addition to the ensemble.

Conductors usually schedule rehearsals, allowing sufficient time for the preparation of new works as well as reviewing the standard repertoire. The principal conductor or guest conductor meets separately with each soloist well in advance of a performance. They also work closely with concertmasters (principal solo violinists) in preparing for rehearsals.

A conductor's reputation is based largely on presenting a strong, dynamic presence as a leader. This comes from exceptional talent (most conductors are first class performers themselves), a unique style and the ability to communicate with musicians individually and collectively.

Some conductors hold the additional role of **music director** of an orchestra or musical group. Music directors make artistic decisions for the group, including choosing the repertoire and guest artists for the upcoming season.

Symphony orchestras often have a general manager who works closely with the music director/conductor to handle financial matters. Overseeing the activities of the music director and general manager is a board of directors. In larger organizations, the management team also includes an artistic administrator who works closely with the conductor or music director and management and is usually a member of negotiating teams.

Working Conditions

Guest conducting often involves a considerable amount of travelling. It may include conducting singers as well as players. Sometimes, orchestra conductors conduct several hundred performers at one time, including instrumentalists, choirs and soloists.

Personal Characteristics

Orchestra and band conductors need the following characteristics:

- passion, insight and musical talent

- the ability to inspire members of the orchestra or band
- the flexibility required to be responsive to member needs, abilities and ideas.

They should enjoy taking charge and controlling situations, and developing innovative approaches.

Educational Requirements

(section revised JANUARY 2006)

Orchestra and band conductors must have a thorough knowledge of music, beginning with the study of an instrument (usually, piano). In general, they need:

- mastery of at least one instrument and performance experience
- an overall understanding of musical instruments and their techniques
- interpretive skills and instincts
- ear training (the ability to hear more than one voice at a time)
- practical experience in composition
- advanced skills in musical analysis
- demonstrated mastery of various musical styles
- knowledge of conventional conducting techniques (use of the baton, right and left arms) and the ability to express themselves through gestures.

Conductors may also have:

- studied the languages of the great composers (Italian, French and German)
- studied the standard repertoire of various musical periods
- cultivated a broad appreciation for the arts and history, through travel and study beyond their music training.

Formal academic training for conductors often starts with a four year bachelor's degree in music. Most conductors then continue their music education with a master's degree or even a doctoral degree in music or study at a music conservatory. Admission to a graduate degree program generally requires an acceptable average in a related bachelor's degree program.

In Alberta, the following post-secondary institutions offer **four year** bachelor's degree programs in music.

- **Alliance University College** in Calgary. The entrance requirement is five senior matriculation level courses including English and math with an minimum overall average of 60 per cent.
- **Canadian Nazarene University College** in Calgary. The entrance requirement is a high school diploma with a minimum average of at least 60 per cent in five Grade 12 subjects including English, and math or a second language.
- **Canadian University College** in College Heights. The entrance requirement is a high school diploma with English 30 and at least three other 30-level courses.
- **The King's University College** in Edmonton. The entrance requirement is an average of at least 60 per cent in English 30 and four other appropriate Grade 12 subjects.
- **University of Alberta** in Edmonton. The entrance requirement for the Bachelor of Music program is a high school diploma with an average of at least 72 per cent in English 30 and four of the following subjects: a 30-level language other than English, a second 30-level language other than English, Biology 30, Chemistry 30, Physics 30, Math 30, Pure Math 30, Math 31, Science 30, one approved Fine Arts subject. An audition, music rudiments exam and aural skills exam are required. The University of Alberta in Camrose also offers bachelor degree programs in music.
- **University of Calgary**. The entrance requirements are a high school diploma with an average of at least 72 per cent in English 30 and four of the following subjects: Social Studies 30, Pure Math 30, Applied Math 30, Math 31, Biology 30, Chemistry 30, Physics 30, Science 30, a 30-level language other than English, Music 30 or one five credit Grade 12 subject. An audition and interview are also required. The University of Calgary also offers a master's degree program in music, and a Diploma of Fine Arts program in Music (three summer sessions of three weeks each). The entrance requirement for the diploma program is a bachelor's degree in music (or individual assessment of qualifications).
- **University of Lethbridge**. The entrance requirements are an average of at least 65 per cent in English 30, three other appropriate 30-level subjects and a fifth Grade 12 subject, an appropriate music background and an audition.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Those wishing to teach music and conduct groups in schools may take any of the following education routes:

- a four year Bachelor of Education (B.Ed.) degree, specializing in music
- a five year combined B.Mus./B.Ed. degree
- a three or four year bachelor's degree in music followed by two or more years in a Bachelor of Education (After Degree) program.

For a listing of Alberta post-secondary institutions that offer programs in Education, see the Secondary School Teacher occupational profile.

Aspiring conductors should observe well known conductors in action. Some established conductors will allow conducting students to attend and observe working rehearsals. It may be possible for a student interested in conducting to assist a teacher or principal conductor with a youth orchestra or school band.

Employment and Advancement

(section revised JANUARY 2006)

There are many more conductors than orchestras and bands in Canada. Young conductors may start out by working with community and youth orchestras, as repetiteurs for opera ensembles or in staff, rehearsal or conductor-in-residence positions.

Conductors may work with:

- junior and senior high school groups
- university and college groups
- community groups
- small professional ensembles (jazz and dance bands, chamber orchestras, wind ensembles)
- large symphonic orchestras.

School band conductors are usually expected to teach classes in music, as well as direct the school band.

Conductors may gain recognition and visibility by:

- attending conductor training workshops
- working with soloists who are impressed with a conductor's performance
- working with composers of new works
- winning awards at national and international competitions
- obtaining study grants and scholarships to study abroad
- guest conducting with other orchestras.

Many conductors must work in other music-related areas to make a living while they study and gain experience. This may include performing, teaching, composing or arranging.

Orchestra and band conductors are part of the larger National Occupational Classification 5132: Conductors, Composers and Arrangers. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Information, Culture and Recreation**
- **Repair, Maintenance, Personal and Other Services**

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta,
- **employment turnover** (work opportunities generated by people leaving existing positions),
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before), and
- **size of the occupation.**

Over 300 Albertans are employed in the Conductors, Composers and Arrangers occupational group which is expected to grow 1.2 to 2.2 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover. (**Note**: Since orchestra and band conductors form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for orchestra and band conductors.)

Salary

(section revised OCTOBER 2005)

Salaries for school band conductors who have a degree and a teaching certificate vary depending on the individual's qualifications and experience. Community orchestras may pay conductors minimal salaries or token honorariums.

Fees and salaries for orchestra conductors are generally negotiated separately for each contract. In smaller orchestras, they can range significantly.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Conductors, Composers and Arrangers occupational group working part-time or full-time earned an average salary of **$22,900 a year**.

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Cultural Human Resources Council website: www.culturalhrc.ca

Music Alberta website: www.musicalberta.com

Related Occupational Profiles

Choral Conductor
Composer
Instrumental Musician
Music Copyist
Orchestrator/Arranger
Songwriter

Related High School Subjects

Enterprise and Innovation; Fine Arts (Music); Language Arts; Languages (other than English); Mathematics; Science; and Social Studies

Related Post-Secondary Fields of Study

Fine Arts and Performing Arts

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Orchestrator/Arranger

Produced MAY 2003

Orchestrators transcribe musical compositions into scores and assign specific passages to particular instruments to add desired variations of sound. Arrangers rewrite original musical scores in different musical styles by changing the rhythm, harmony or tempo.

NOC Number(s): 5132.3
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **D I m**

Duties

After studying an original piece of music, orchestrators and arrangers experiment with it and choose various combinations of instruments to produce desired effects. Arrangers may also add vocal parts. The difference between orchestrators and arrangers is in the degree to which they change the original music.

Orchestrators assign specific passages of a score to particular instruments to produce the desired tonal colour (variation of sound) but do not often make other changes to the original composition. Then they write out each individual musical part clearly on score paper. Often the composer of the musical piece is also the orchestrator, or the composer provides an orchestral sketch and the orchestrator writes out all of the instrumental parts in detail.

Arrangers make changes in the original piece of music to accommodate the requirements of a particular medium (band, orchestra, choral group, solo artist, film score, radio jingle). They may work on new arrangements of old hits (e.g. arrange an old gospel tune in a jazz style) or arrange new compositions for different mediums or in different styles.

Arrangers often use synthesizers and computers to experiment with a variety of musical sounds. During recording sessions, arrangers may act as musical directors, selecting songs, scoring charts, rehearsing musicians and conducting the performance.

Many orchestrators and arrangers notate their own scores, although they may hire music copyists to copy musical parts.

Working Conditions

Orchestrators and arrangers generally determine their own working environment and working hours. However, they may be required to work long hours to meet tight deadlines.

Personal Characteristics

Orchestrators and arrangers need the following characteristics:

- the ability to work with a wide variety of people
- good communication skills
- the ability to work under pressure and still produce scores that are clear and neat in appearance.

They should enjoy being creative, and using instruments and computers to perform tasks requiring precision.

Educational Requirements

(section revised JANUARY 2006)

Arrangers and orchestrators generally begin **training in music theory, history and performance** at an early age. Most play at least one instrument and understand the ranges and techniques of other instruments and the human voice. In general, they must have:

- strong abilities in reading and writing music
- a thorough understanding of various styles of music
- a good ear for hearing the individual parts in songs

- extensive knowledge of music theory, harmony, counterpoint, composition and orchestration.

Most post-secondary music programs include courses in orchestration. In Alberta, the following instutitions offer post-secondary music programs.

- **Alliance University College** offers a four year BA in Music. The entrance requirement is five senior matriculation level courses including English and math with an minimum overall average of 60 per cent.
- **Banff Centre for the Arts** offers intensive workshops with world-class musicians and conductors. Applicants must submit a portfolio, project description and resume. An audition tape may be required.
- **Canadian Nazarene University College** in Calgary offers a three and four year BA in Music. The entrance requirement is a high school diploma with a minimum average of at least 60 per cent in five Grade 12 subjects including English, and math or a second language.
- **Canadian University College** in College Heights offers three year and four year degree programs in Music. The entrance requirement is a high school diploma with English 30 and at least three other courses at the 30 level.
- **Concordia University College of Alberta** in Edmonton offers a three year degree program in Music. The entrance requirement is an average of at least 60 per cent in English 30 and four other appropriate Grade 12 subjects.
- **Gardner College - A Centre for Christian Studies** in Camrose offers a two year Music Performance diploma program. The entrance requirement is a high school diploma or equivalent with English 30 or 33.
- **Grande Prairie Regional College** offers a two year Music Acoustic diploma program. The entrance requirement is a high school diploma with English 30, Music 30 and Grade 2 Conservatory music theory (or equivalent). A placement exam and an audition are required.
- **Grant MacEwan College** in Edmonton offers a two year Music diploma program with specializations in performance, recording arts and writing. The emphasis in this program is on jazz and commercial music. The entrance requirement is a high school diploma or equivalent.
- **Keyano College** in Fort McMurray offers one year certificate and two year diploma programs in Music. The entrance requirement is a high school diploma with English 30 or 33 and an audition.
- **The King's University College** in Edmonton offers three year and four year degree programs in Music. The entrance requirement is an average of at least 60 per cent in English 30 and four other appropriate Grade 12 subjects.
- **Mount Royal College** in Calgary offers a two year Music Performance diploma program with specializations in orchestral instruments and vocal music. The entrance requirements are a high school diploma or equivalent, performance skills equivalent to Grade 10 Conservatory, an audition and a placement test in music theory, history and keyboard.
- **Red Deer College** offers a two year Music diploma program. The entrance requirements are a high school diploma with English 30 or 33, an audition and an examination.
- **University of Alberta** in Edmonton offers four year degree programs and five year combined degree programs in Music. The entrance requirement for the Bachelor of Music program is a high school diploma with an average of at least 72 per cent in English 30 and four of the following subjects: a 30-level language other than English, a second 30-level language other than English, Biology 30, Chemistry 30, Physics 30, Math 30, Pure Math 30, Math 31, Science 30, one approved Fine Arts subject. An audition, music rudiments exam and aural skills exam are required. The University of Alberta in Camrose also offers bachelor degree programs in music.
- **University of Calgary** offers a four year degree program with a specialization in composition. The entrance requirements are a high school diploma with an average of at least 72 per cent in English 30 and four of the following subjects: Social Studies 30, Pure Math 30, Applied Math 30, Math 31, Biology 30, Chemistry 30, Physics 30, Science 30, a 30-level language other than English, Music 30 or one five credit Grade 12 subjects. An audition and interview are also required.
- **University of Lethbridge** offers four year degree programs and five year combined degree programs with a specialization in theory (including composition). The entrance requirement are an average of at least 65 per cent in English 30 and three other appropriate 30-level subjects plus a fifth Grade 12 subject, an appropriate music background and an audition.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

(section revised JANUARY 2006)

Orchestrators and arrangers are almost always freelance artists; there are virtually no full-time positions. They are usually hired by composers or performers or work on commissions. In large music centres in Canada, they may also work with:

- music publishers to score various pieces (particularly educational music)
- wired music services (e.g. Muzak) to produce packages of music tapes
- television and film studios to create soundtracks
- musical ensembles (e.g. small bands, groups, studio orchestras)
- songwriters.

Most orchestrators and arrangers also work part-time in related fields such as composition, teaching, producing and performing. Experienced orchestrators and arrangers may move into fields such as music publishing or artist management.

Some orchestrators choose to specialize in one type of music (e.g. choral works or pop music). However, the ability to work in several different mediums and music styles is a definite asset when looking for work.

Orchestrators and arrangers are part of the larger National Occupational Classification 5132: Conductors, Composers and Arrangers. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Information, Culture and Recreation**
- **Repair, Maintenance, Personal and Other Services**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 300 Albertans are employed in the Conductors, Composers and Arrangers occupational group which is expected to grow 1.2 to 2.2 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover. (**Note**: Since orchestrators and arrangers form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for orchestrators and arrangers.)

Salary

(section revised OCTOBER 2005)

The American Federation of Musicians of the United States and Canada (AFM) pay scales for orchestrators vary with the number of lines on a page, the length of the piece and the medium. Most fees are negotiated between the client and the orchestrator. It is not absolutely necessary for orchestrators and arrangers to belong to the AFM; however, some employers, particularly in film and television, hire only union members.

In some instances, arrangers negotiate royalty agreements for pieces of music they have arranged or recorded, in addition to their fee.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Conductors, Composers and Arrangers occupational group working part-time or full-time earned an average salary of **$22,900 a year**.

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Cultural Human Resources Council website: www.culturalhrc.ca

Music Alberta website: www.musicalberta.com

Related Occupational Profiles

Choral Conductor
Composer
Instrumental Musician
Music Copyist
Orchestra/Band Conductor
Songwriter

Related High School Subjects

Fine Arts (Music); Language Arts; Languages (other than English); Mathematics; and Science

Related Post-Secondary Fields of Study

Fine Arts and Performing Arts

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Outdoor Power Equipment Technician

Apprenticeship and Industry Training

Produced FEBRUARY 2006

Outdoor power equipment technicians repair, service and maintain small gasoline and diesel powered marine, power, recreational and turf equipment used by industry and homeowners.

NOC Number(s): 7335
Minimum Education: Apprenticeship Trade
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **O M i**

Duties

Duties vary from one position to another but, in general, outdoor power equipment technicians:

- review and interpret work orders and technical manuals
- inspect and test engine, motors and other mechanical components using test devices to diagnose and isolate faults
- adjust, repair or replace mechanical or electrical system parts and components using hand tools and equipment
- test and adjust repaired equipment for proper performance
- perform scheduled maintenance service on equipment
- advise customers on work performed and general condition of equipment
- estimate cost of repairs.

In Alberta, there are four types of outdoor power equipment technicians: marine equipment technician, power equipment technician, recreational equipment technician and turf equipment technician.

Marine equipment technicians repair, service and maintain equipment such as outboard motors and jet drives in boats and personal watercraft.

Power equipment technicians repair, service and maintain equipment such as generators, mowers and chain saws.

Recreational equipment technicians repair, service and maintain equipment such as snowmobiles and recreational multi-wheeled utility vehicles.

Turf equipment technicians repair, service and maintain equipment such as aerators and golf carts.

Working Conditions

The working conditions for outdoor power equipment technicians vary depending on the branch.

Recreational equipment technicians usually work indoors in shops and occasionally outdoors. Most work a 40-hour, five-day week. However, some evening, weekend or holiday work may be required, particularly during the busier months. Some may experience seasonal layoffs during the winter months. They may be some risk of injury when working with hand and power tools.

Power equipment technicians may work in the comfort of a fully equipped service centre or they may have to travel to make service calls. Hours of work vary from regular hours to long and hectic hours during busy seasons. The work is often dirty and greasy. There is some risk of injury when working with hot engines and sharp edges.

Marine Equipment Technicians. In colder climates, the work is seasonal. They are very busy doing diagnostic and repair work in the warmer months, and may encourage customers to have preventative maintenance work done in the winter. Because of the seasonal nature of the work, they must be skilled in other types of repair work (eg. repairing snowmobiles) to remain employed year-round. They usually work indoors in shops. The work is noisy when engines are being tested. There is some risk of injury when working near exhaust fumes.

Turf Equipment Technicians. These technicians have the same working conditions as the marine equipment technicians.

Outdoor power equipment technicians may be required to lift items weighing over 25 kilograms (up to about 65 kilograms).

Personal Characteristics

Outdoor power equipment technicians need the following characteristics:

- a mechanical ability and an interest in all types of machinery and engines, electronics and precision equipment
- good customer service skills
- the willingness to work long hours in the busy season
- the ability to work independently or as part of a team
- the ability to think logically
- the ability to keep up to date with changing technology
- the ability to work in a standing position for long periods of time
- the ability to work in awkward, tight or confined spaces.

They should enjoy doing precision work, problem-solving and working with their hands.

Educational Requirements

To work in Alberta, outdoor power equipment technicians must be ONE of the following:

- registered apprentices
- certified journeymen
- working for an employer who is satisfied that they have the skills and knowledge expected of certified journeymen
- self-employed.

To **register** with **Alberta Apprenticeship and Industry Training**, apprentices must:

- have at least Alberta Math 10 or 13, Pure Math 10 or Applied Math 10 and English 10 or 13 (or equivalent) or pass an entrance exam
- find a suitable employer who is willing to hire and train an apprentice. Most employers prefer to hire high school graduates and may select apprentices from among their current employees.

The **term of apprenticeship** for all four branches is four years (four 12-month periods) that include a minimum of 1,000 hours of on-the-job training and eight weeks of technical training for the first three years and a minimum of 1,000 hours of on-the-job training and six weeks of technical training in the fourth. High school students can become apprentices and gain credits toward apprenticeship training and a high school diploma at the same time through the Registered Apprenticeship Program (RAP).

Applicants who have related training or work experience may be eligible for credit or certification.

Technical training is arranged by Alberta Apprenticeship and Industry Training and is currently offered at the Northern Alberta Institute of Technology (NAIT) in Edmonton.

Outside the apprenticeship program, the following post-secondary institutions offer related training:

- **Northern Alberta Institute of Technology (NAIT)** offers the following certificate programs. The entrance requirement for all the programs is English 10 or a Grade 11 English and Math 10 or a Grade 11 Math or equivalent:
  - 32-week Marine Service Technician certificate of achievement program in Edmonton
  - 32-week Outdoor Power Equipment Technician certificate of achievement program in Fairview.
  - one year Turfgrass Equipment Technician certificate.

- **Portage College** in Lac La Biche offers a 24-week Outdoor Power Equipment Technician certificate program. The entrance requirement is at least Grade 9 or equivalent.

Pre-employment programs for prospective apprentices and continuing education programs for journeymen may be offered on an as needed basis by the institution(s) listed above or other schools.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

Outdoor power equipment technicians are employed by a variety of employers in both the private and public sectors, in a number of different industries, based on specialized equipment. Some employers may include equipment distributors, retailers, rental companies, construction companies, landscaping maintenance and builders, golf courses, parks and recreation, forestry companies or original equipment manufacturers.

Experienced journeyman may be moved to supervisor or service manager positions, may be self-employed or start their own business. Alberta certified journeyman outdoor power equipment technicians who have the supervisory or management skills required by industry may apply for an Achievement in Business Competencies Blue Seal by contacting Alberta Apprenticeship and Industry Training.

Outdoor power equipment technicians are part of the larger National Occupational Classification 7335: Other Small Engine and Equipment Mechanics. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Repair, Maintenance, Personal and Other Services**
- **Information, Culture and Recreation**
- **Retail Trade**
- **Finance, Insurance and Real Estate**
- **Wholesale Trade**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- time of year (see working conditions)
- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 550 Albertans are employed in the Other Small Engine and Equipment Mechanics occupational group which is expected to grow 1.0 to 2.0 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover. (**Note**: Since outdoor power equipment technicians form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for outdoor power equipment technicians.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

According to the Alberta Provincial Apprenticeship Committee for this trade, journeyman wage rates for the branches of the Outdoor Power Equipment Technician trade vary, but generally range from **$18 to $24 an hour plus benefits** (2006 estimates).

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Other Small Engine and Equipment Mechanics occupational group working part-time or full-time earned from **$21,900 to $98,400 a year.** The average salary was **$44,300 a year.**

Other Sources of Information

Alberta Apprenticeship and Industry Training website: www.tradesecrets.org

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Related Occupational Profiles

Appliance Service Technician
Electrical Motor Systems Technician
Motorcycle Mechanic

Related High School Subjects

Electro-Technologies; Language Arts; Mathematics; Mechanics; and Physical Education

Related Post-Secondary Fields of Study

Trades, Industrial and Related Training

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Outdoor Sport/Recreation Guide

Produced MAY 2005

Outdoor sport and recreation guides organize and conduct outdoor activities such as mountain expeditions, rafting trips, hunting trips, fishing trips and trail rides.

NOC Number(s): 6442
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: S M O

Duties

Outdoor sport and recreation guides may be specialists in mountain guiding, white-water rafting, hunting, fishing or ecotourism. Some guides work in a combination of these areas.

Mountain guides organize and conduct climbing, hiking and skiing expeditions in the mountains. In general, they are responsible for:

- planning expeditions and instructional sessions that are appropriate for clients' abilities and environmental conditions
- assembling the required equipment and supplies
- arranging transportation to and from the starting point
- leading the group during the expedition
- providing information about local vegetation, wildlife and natural history
- preparing meals and setting up camp on overnight expeditions
- providing first aid services when they are needed.

Mountain guides also may teach skills to skiers, climbers and mountaineers. They may specialize in skiing, rock climbing, alpine climbing, hiking or instructing on climbing structures.

White-water rafting guides lead groups of people on rafting trips through scenic stretches of river and white-water rapids. In general, they are responsible for:

- planning expeditions
- assembling supplies and equipment prior to departure
- instructing clients on safe rafting procedures
- preparing base camps for longer expeditions.

Once on the river, white-water rafting guides must:

- follow a specified route and provide instructions and commentary while steering the raft through a safe but challenging path
- read the water (determine by watching the surface of the river what is going on underneath the surface and how it will affect the raft)
- handle emergency situations such as a raft caught sideways against a rock, a passenger in the river or a punctured raft.

On trips lasting more than a few hours, guides also are responsible for preparing meals, setting up camp and entertaining their groups.

Hunting and fishing guides plan, organize and lead hunting and fishing trips, photo safaris and nature study expeditions. In general, they are responsible for:

- choosing the route that will provide the best camping sites and animal or fish habitats
- explaining hunting and fishing regulations and ensuring that they are obeyed
- providing advice on equipment and tackle
- checking equipment and supplies
- providing appropriate transportation (e.g. motorboats, land vehicles, horses)

- ensuring that appropriate safety practices are observed
- providing information about the habitat and wildlife seen on the trip
- setting up campsites and cooking meals
- providing first aid when necessary.

When guiding novices, they also teach clients how to clean, preserve and cook fish or game, and dispose of waste parts.

Ecotourism guides provide leadership and information about natural habitats, wildlife and sustainable development. They may lead groups participating in outdoor activities such as hiking, cycling, mountaineering, canoeing, kayaking, sailing or horseback riding. For information about a closely related occupation, see the Interpretive Naturalist occupational profile.

Working Conditions

Outdoor sport and recreation guides work outdoors, often in wilderness conditions. The work is generally seasonal and can be strenuous. Guides may be away from home for long periods and their hours of work may be unpredictable (e.g. virtually non-stop during favourable weather conditions).

Most guides must be able to lift items weighing up to 25 kilograms. Mountain guides must be able to lift items weighing over 25 kilograms when necessary.

Personal Characteristics

Outdoor sport and recreation guides need the following characteristics:

- at least 18 years of age and in good health
- outgoing and enthusiastic
- strong leadership and conflict resolution skills
- patience, especially when dealing with inexperienced or troublesome clients
- the ability to handle emergency situations effectively
- commitment to ensuring client safety.

They should enjoy dealing with people, planning and arranging expeditions, and handling equipment and supplies.

Educational Requirements

There are no minimum education requirements but, in general, guides need:

- a good knowledge of their field
- certification in wilderness first aid and CPR (cardiopulmonary resuscitation)
- the appropriate level of swimming or skiing certification (if applicable)
- a valid Class 5 driver's licence (a Class 4 license is required in some situations)
- the knowledge and mechanical skills necessary to maintain their equipment.

Some guides must supply their own equipment. Those who are self-employed also need business skills.

To work in national and provincial parks, **mountain guides** must be certified by the **Association of Canadian Mountain Guides**. Certification as a mountain guide requires successful completion of the requirements for Alpine Guide and Ski Guide certificates. To attend the required courses, applicants should:

- be at least 19 years of age
- meet minimum climbing and skiing experience requirements (at least three years of experience in a variety of conditions)
- have completed a Canadian Avalanche Association Training Schools Professional Level 1 Avalanche course
- have first aid certification
- be in good health.

Becoming a certified mountain guide generally takes three to five years. It involves training in guiding techniques, work experience and assessment (including final exams). Most of the curriculum is field-based and involves practical exercises.

White-water rafting guides are trained on the job. In addition to safe rafting and emergency procedures, their training may include information about the history, wildlife and plants of the area in which they will be working. Employers of white-water rafting guides look for potential employees who have:

- good social skills
- excellent canoeing skills

- outdoor experience.

Most employers prefer to hire people who are already trained in rafting but will consider hiring people who have related experience and a good attitude.

Fishing guides require a valid Alberta Fishing license.

Hunting guides employed by outfitters must have a letter of recommendation from the outfitter employing them. Guide licenses issued on a letter of recommendation are valid only for the period of time the person is employed by the outfitter making the recommendation. Those who work with horses must be be knowledgeable about horses and able to read the water when crossing rivers.

To become a self-employed outfitter, hunting guides must:

- have held a guide's designation (license) for at least 12 months
- be bonded and insured
- obtain an Outfitter-Guide Permit.

Outfitters must purchase allocations through the **Alberta Professional Outfitters Society** to be able to contract with non-resident clients to hunt different types of game in various regions of the province.

In Alberta, the following post-secondary education institutions offer programs directly related to outdoor recreation.

- **Canadian University College** in College Heights offers Outward Pursuits programs ranging from a one year Outdoor Leadership certificate to Bachelor of Arts (BA) degree programs. The entrance requirement for these programs is a high school diploma with English Language Arts 30-1 and three other 30 level courses.
- **Lakeland College** offers a one year Adventure Tourism certificate program in Sherwood Park and two year diploma programs in Adventure Tourism and Outdoor Recreation, and Wildlife Guilding and Outfitting in Vermilion. The entrance requirement for the Adventure Tourism certificate and diploma programs is a high school diploma or equivalent with English Language Arts 30-1 (or English 30, or at least 65 per cent in ELA 30-2 or English 33) and Pure or Applied Math 30 (or Math 30 or 33). The entrance requirement for the Wildlife Guiding and Outfitting program is a high school diploma with ELA 30-1 or equivalent, Biology 20 and at least 60 per cent in Pure or Applied Math 10 or equivalent.
- **Medicine Hat College** offers a four year Bachelor of Applied Science degree program in Ecotourism and Outdoor Leadership with a two year diploma option. The entrance requirement is a high school diploma with an average of at least 60 per cent in English Language Arts 30-1 and Social Studies 30, and a passing mark in any Grade 12 science course (Biology 30 recommended). Medicine Hat College also offers a two year Travel and Tourism Management diploma program.
- **Mount Royal College** in Calgary offers a four year applied degree program in Ecotourism and Outdoor Leadership. The entrance requirement is an average of at least 60 per cent in English Language Arts 30-1, Biology 30 and three other appropriate Grade 12 subjects (Social Studies 30 recommended).
- The **University of Alberta** in Edmonton offers a four year BA degree program in Recreation, Sports and Tourism. The entrance requirement is a at least 60 per cent in English 30 plus four other approved Grade 12 subjects (Biology 30 and Social Studies 30 recommended).

For information about other post-secondary programs related to recreation, see the Recreation Co-ordinator/Supervisor occupational profile.

Continuing education programs often are offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

(section revised JANUARY 2006)

Most hunting/fishing guides and mountain guides are self-employed or employed by outfitters. White-water rafting guides are self-employed or employed by speciality companies in river rafting.

Many outdoor sport and recreation guides work from May to October and find other employment during the winter months. The growing popularity of helicopter skiing has created new employment opportunities for mountain guides in the winter months. The slack periods for mountain guides are spring and fall.

In large organizations, experienced outdoor sport and recreation guides may move into supervisory positions.

In Alberta, over 75 per cent of the outdoor sport and recreation guides work in the following industries:

- **Accommodation and Food Services**
- **Information, Culture and Recreation**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 300 Albertans are employed in the Outdoor Sport and Recreation Guides occupational group which is expected to grow up 1.5 to 2.5 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Earnings for outdoor sport and recreation guides vary considerably, partly because their fees vary and partly because they may be paid only for the days they work. The earnings of self-employed guides also depend on their ability to attract and retain clients. Many guides work at other jobs to ensure a steady income.

According to the **2005 Alberta Wage and Salary Survey**, part-time or full-time starting salaries for Albertans working in the Outdoor Sport and Recreational Guides occupational group ranged from **$16,500 to $37,000 a year.** The average salary was **$26,100 a year**.

Other Sources of Information

(section revised OCTOBER 2005)

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Association of Canadian Mountain Guides (ACMG) website: www.acmg.ca

Alberta Professional Outfitters Society (APOS) website: www.apos.ab.ca

Alberta Tourism Education Council (ATEC) website: www.atec.ca

Interpretation Canada website: www.interpcan.ca

Related Occupational Profiles

Environmental Education Specialist
Heritage Interpreter
Interpretive Naturalist
Tour Guide
Travel Guide

Related High School Subjects

Community Health; Enterprise and Innovation; Foods; Forestry; Language Arts; Languages (other than English); Management and Marketing; Mathematics; Physical Education; Science (Biology); Social Studies; Tourism Studies; and Wildlife

Related Post-Secondary Fields of Study

Personal and Food Services

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Painter and Decorator

Apprenticeship and Industry Training

Produced FEBRUARY 2006

Painters and decorators apply paint, wall coverings and other finishes to interior and exterior surfaces of buildings and other structures.

NOC Number(s): 7294
Minimum Education: Apprenticeship Trade - Grade 9
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **M O i**

Duties

Duties may vary from one position to another but, in general, painters and decorators:

- estimate the quantity of materials required by measuring surfaces or review work orders
- remove old coatings by stripping them with solvents, heat, sanding, wire brushing, water or sand blasting techniques
- prepare the surface for covering by cleaning it, filling nail holes and cracks, and sanding rough spots
- apply an undercoat primer or sealer before painting, or apply sizing before wallpapering
- match specified colours by using premixed paints, or by mixing colour and pigment with oil, and thinning and drying additives
- use brushes, rollers or spray guns to apply liquid coatings such as paint, stain or varnish to surfaces of wood, metal, brick, concrete, plaster, stucco or stone
- sandblast and apply industrial coatings
- apply finishes that are sponged, ragged and layered
- apply paper, or natural and synthetic fabric wall coverings, fire-proof and fire retardant coatings.

Working Conditions

Painters and decorators try to arrange their work so they will be outdoors in late spring, summer and early fall and indoors in the late fall and winter. They must stand for long periods of time often working with their arms raised over their heads. There is some risk of injury due to falling off ladders, scaffolds or swing stages, and working with hazardous chemicals such as paint thinners and removers.

Painters and decorators may be required to lift items weighing up to 25 kilograms.

Personal Characteristics

Painters and decorators need the following characteristics:

- good colour sense
- manual dexterity
- the ability to work in high places
- physical strength and stamina
- the ability to keep up to date with changing technology and product changes
- the ability to do precise and thorough work.

They should enjoy doing work that involves variety and creativity.

Educational Requirements

To work in Alberta, painters and decorators must be ONE of the following:

- registered apprentices

- certified journeymen
- working for an employer who is satisfied that they have the skills and knowledge expected of certified journeymen
- self-employed.

To **register** with **Alberta Apprenticeship and Industry Training**, apprentices must:

- have at least an Alberta Grade 9 education (or equivalent) or pass an entrance exam
- find a suitable employer who is willing to hire and train an apprentice. Most employers prefer to hire high school graduates and may select apprentices from among their current employees.

The **term of apprenticeship** is three years (three 12-month periods) that include a minimum of 1,300 hours of on-the-job training and eight weeks of technical training each year. High school students can become apprentices and gain credits toward apprenticeship training and a high school diploma at the same time through the Registered Apprenticeship Program (RAP).

Applicants who have related training or work experience may be eligible for credit or certification.

Painter and decorator apprentices may attempt the Interprovincial Exam in the final period of their apprenticeship training and, if successful, are granted a Red Seal (which is recognized in most parts of Canada).

Technical training is arranged by Alberta Apprenticeship and Industry Training and is currently offered at:

- the Northern Alberta Institute of Technology (NAIT) in Edmonton
- the Southern Alberta Institute of Technology (SAIT) in Calgary.

Pre-employment programs for prospective apprentices and continuing education programs for journeymen may be offered on an as needed basis by the institution(s) listed above or other schools.

Employment and Advancement

Painters and decorators are employed by:

- contractors involved in new construction, repair, alteration or remodelling work
- organizations that own or manage large buildings such as apartment complexes or schools.

Many painters and decorators are self-employed.

Experienced painters and decorators may advance to supervisory positions with painting and decorating contractors, or set up their own small businesses. Alberta certified journeyman painters and decorators who have the supervisory or management skills required by industry may apply for an Achievement in Business Competencies Blue Seal by contacting Alberta Apprenticeship and Industry Training.

In Alberta, most people employed as painters and decorators work in the **Construction** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- time of year (for seasonal jobs)
- trends and **events** affecting overall employment (especially in the Construction industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 6,900 Albertans are employed in the Painters and Decorators occupational group which is expected to grow 1.6 to 2.6 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 110 to 180 **new** positions will be created each year **in addition** to job openings created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Apprentices earn 55 per cent of the journeyman wage rate in their place of employment in the first year, 75 per cent in the second and 85 per cent in the third. According to the Alberta Provincial Apprenticeship Committee for this trade, journeyman wage rates vary, but generally range from **$16 to $30 an hour plus benefits** (2005 estimate).

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Painters and Decorators occupational group working part-time or full-time earned from **$16,900 to $63,200 a year.** The average salary was **$40,200 a year.**

Other Sources of Information

Alberta Apprenticeship and Industry Training website: www.tradesecrets.org

Alberta Construction Industry "Trade Up!" website: www.careersconstruction.com

Alberta Painting Contractors Association website: www.apca.ca

Calgary Construction Association website: www.cca.cc

Construction Sector Council website: www.csc-ca.org

Related Occupational Profiles

Floorcovering Installer
Glazier
Insulator
Lather-Interior Systems Mechanic
Roofer

Related High School Subjects

Construction Technologies; Design Studies; and Physical Education

Related Post-Secondary Fields of Study

Trades, Industrial and Related Training

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Painter/Printmaker

Produced JULY 2005

Painters and printmakers express artistic ideas in original paintings, mixed media drawings, etchings and other two-dimensional artistic works.

NOC Number(s): 5136.1
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **I O m**

Duties

Contemporary two-dimensional art can range in size from a postage stamp to a whole wall. Artists generally produce one or a limited number of copies of each piece of work.

Painters use brushes, palette knives and specialized tools to apply colour to a variety of surfaces (e.g. canvas, wood, metal, paper, paper-pulp board). In general, painters may:

- paint with a variety of media (e.g. water colours, acrylics, oils, tempera, gouache, encaustic)
- create drawings using a variety of media (e.g. charcoal, chalk, graphite, coloured pencils, inks, pastels)
- glue or laminate various materials to a surface to create an image
- specialize in particular types of media or mixed media.

Printmakers create surfaces which are then used to print a limited number of the same image on other materials (e.g. paper, fabric). A variety of methods may be used to create images and transfer them to other surfaces including:

- intaglio - uses images on metal plates (e.g. produced by etching or engraving) that are transferred via a specialized press
- relief - uses linocuts, wood cuts, wood engraving, stone prints and clay prints that can be transferred by press or hand rubbing
- lithography - uses very heavy stones or metal plates as a printing surface and requires a specialized lithographic printing press
- stencil - stencil prints involve dabbing or brushing ink or paint through cut stencils; silkscreening uses screens, a work support and hand held squeegees
- monotype - uses single images created on a printing surface by hand painting and printed on a press or by hand rubbing
- electronic/digital - uses computer paint and photo programs and photocopying or computer printing.

Objective artists may:

- travel to paint specific people or objects (e.g. landscapes, buildings, wildlife)
- work from photographs
- work with models, still life, animals or flowers.

Nonobjective painters create their own subjects and designs.

Many artists are continually studying and learning different techniques and experimenting with different materials and mediums. They need to keep up to date with what is going on in the art world by reading, attending exhibits at art galleries and talking to other artists.

Working Conditions

Working conditions such as hours of work vary considerably for painters and printmakers. Printmaking and moving large paintings can be physically demanding. Some techniques involve working with hazardous chemicals.

Studios may be clean and well ventilated, or they may have less than ideal working conditions. Many artists work at home; others rent space in artist-run centres, warehouses or store-fronts in low rent districts.

Personal Characteristics

Painters and printmakers need the following characteristics:

- self-discipline and determination
- self-promotion and marketing skills
- artistic talent and creativity
- technical ability.

They should enjoy working independently.

Educational Requirements

There are **no formal education requirements** for painters and printmakers. However, they must have a portfolio of work that includes samples or good quality slides of their best work.

In addition to artistic skills and knowledge of form, line, composition and balance, painters and printmakers need technical knowledge about materials. They must be knowledgeable about printing, solvents, acids and inks. Knowledge of safety issues is critical, as is training in the use of materials and equipment (e.g. presses).

Increasingly, it is important for both painters and printmakers to have business skills, particularly marketing skills. Art conservation knowledge and photography, mounting and framing skills are definite assets.

There are a number of college and university programs that offer training in fine art and visual communications. Prospective students should look for the schools that have the best blend of technical and creative course materials for their particular interests.

In Alberta, fine art programs are offered by the following post-secondary institutions:

- **Alberta College of Art and Design** in Calgary
- **Grande Prairie Regional College**
- **Grant MacEwan College** in Edmonton
- **Keyano College** in Fort McMurray
- **Medicine Hat College**
- **Mount Royal College** in Calgary
- **Red Deer College**
- **University of Alberta** in Edmonton and Camrose
- **University of Calgary**
- **University of Lethbridge.**

Admission requirements vary from one institution and program to another but generally include a high school diploma with English Language Arts 30-1 (or English 30) and four other appropriate Grade 12 subjects. Some institutions require a minimum acceptable average (ranging from 60 to 80 per cent depending on the program) in specified courses and submission of a portfolio of previous work.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Continuing education programs are often offered on an as needed basis.

The **Banff Centre for the Arts** offers winter and summer programs for experienced painters and printmakers. In addition to a statement of artistic objectives, a portfolio of work is required.

Employment and Advancement

(section revised JANUARY 2006)

Few painters can support themselves from commissions on their art work alone. Many also work full-time or part-time as illustrators, designers, teachers (art classes), gallery assistants, framers or arts administrators.

Painters and printmakers may display their art in:

- galleries and museums
- restaurants and clubs
- office buildings and public spaces
- parks, exhibit grounds and international expositions.

They also may market their work electronically through television or the Internet.

Artists' works may be published as fine art poster prints. Publishers may pay a royalty per print sold or simply purchase

copyright for the work.

Emerging artists usually attract the attention of gallery owners or agents by entering art competitions or festivals, or arranging their own shows in homes or artist-run centres. It helps to get some media attention for art shows.

The **Alberta Foundation for the Arts** and the **Canada Council** offer grants to promising artists to enable them to study and work for a few months or a year at a time. The Foundation buys the art of emerging and established artists with the intent of maintaining a diverse cross-section of Alberta art and the Canada Council purchases work for the Art Bank.

Painters/printmakers are part of the larger National Occupational Classification 5136: Painters, Sculptors and Other Visual Artists. In Alberta, most people employed in this classification work in the **Information, Culture and Recreation Services** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Information, Culture and Recreation industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

About 2,350 Albertans are employed in the Painters, Sculptors and Other Visual Artists occupational group which is expected to grow 1.0 to 2.0 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 20 to 50 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since painters/printmakers form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for painters/printmakers.)

Salary

Art prices vary considerably depending on the artist's reputation, size of the piece and availability of the artist's work. Most galleries charge a commission ranging from 40 to 75 per cent of the price of a sale.

Many artists only make a minimal income from their art.

Some painters receive commissions or fees paid in advance that allow them to buy materials and cover some living expenses while they finish a site-specific or major work. Well established artists may hire agents or work with exclusive dealers who handle marketing, bookkeeping and sales.

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Society of Artists website: www.artists-society.ab.ca

Canadian Artist's Representation/Le Front des Artistes Canadiens website: www.carfac.ca

Federation of Canadian Artists website: www.artists.ca

Society of Northern Alberta Print-Artists (SNAP) website: www.snapartists.com

Visual Arts Alberta Association website: www.visualartsalberta.ab.ca

Related Occupational Profiles

Conservator
Craftsperson
Illustrator
Make-Up Artist
Printing Press Operator
Sculptor
Set Designer

Related High School Subjects

Communication Technology; Design Studies; Fine Arts (Visual Arts); Information Processing; Language Arts; and Management and Marketing

Related Post-Secondary Fields of Study

Fine Arts and Performing Arts

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Paralegal

Produced OCTOBER 2005

Paralegals do independent legal work under the general supervision of lawyers. They perform routine legal and administrative functions and assist lawyers with more complex matters.

NOC Number(s): 4211.1
Minimum Education: 2 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **M S I**

Duties

Under the direction and supervision of one or more lawyers, paralegals may:

- draft legal documents such as pleadings, wills, real estate documents, interlocutory applications and corporate documents
- draft and follow up correspondence
- submit documents for registration with appropriate agencies (e.g. Corporate Registry, Land Titles, Provincial Court)
- conduct tax, land title and other legal searches
- assist with real estate, mortgage, estate administration, corporate, tax and intellectual law transactions
- assist in various aspects of personal injury litigation, civil litigation and family law
- organize documents
- attend Examinations for Discovery and court proceedings to assist lawyers with document management and retrieval
- assist in preparation for and, in some cases, attend business transaction closings
- interview witnesses and assemble documentary evidence for trials
- act as a liaison between clients and lawyers when lawyers are unavailable
- develop office procedure and computer functions to improve efficiency
- perform related administrative functions.

Working Conditions

Paralegals work in an office environment. They usually work a standard work week but must be prepared to work overtime to meet deadlines.

Personal Characteristics

Paralegals need the following characteristics:

- excellent communication skills
- the ability to think logically and analyze information
- the ability to organize work and co-ordinate other people's activities
- the ability to pay careful attention to details
- the ability to handle deadlines and periods of stress
- the ability to work with a minimum of supervision.

Since much of their work concerns clients' private affairs, paralegals must be honest, trustworthy and have a sense of responsibility and respect for the confidentiality of client information.

They should enjoy compiling information, working with people and exploring things in depth.

Educational Requirements

Paralegals need related post-secondary education or equivalent experience. Strong keyboarding, writing, editing, word processing and computer skills are required.

In Alberta, the following institutions offer related **two year** diploma programs. For information about related programs of **one year** or less, see the Legal Secretary occupational profile.

- **Bow Valley College** in Calgary offers a two year Legal Assistant diploma program. The entrance requirement is high school diploma with English Langauge Arts 30-2 and Grade 10 math, or equivalent. Bow Valley College also offers a part-time Legal Administrative Assistant program that includes nine courses (21 hours each).
- **Grant MacEwan College** in Edmonton offers a two year Legal Assistant diploma program that is also available part-time (evenings). The entrance requirement is a high school diploma or equivalent. Applicants must successfully complete an English appraisal (or have at least 65 per cent in English Language Arts 30-1 or English 30, or 75 per cent in ELA 30-2 or English 33) and a keyboard entrance test (30 words per minute with no more than six errors).
- **Red Deer College** offers a two year Legal Assistant diploma program. The entrance requirement is a high school diploma or equivalent. The College also offers a Legal Focus Certificate program for students currently employed in a legal environment.
- The **Southern Alberta Institute of Technology (SAIT)** in Calgary offers a two year Legal Assistant diploma program. The entrance requirement is a high school diploma or equivalent. A typing speed of at least 30 words per minute is recommended.

Continuing education programs are often offered on an as needed basis.

For more information about programs and mature student admission policies, please check post-secondary calendars or websites.

Prior to enrolling in a formal training program, prospective students should contact the program(s) of their choice, the Law Society of Alberta, the Canadian Bar Association (Alberta Branch), the Alberta Association of Professional Paralegals or a sampling of law firms and other potential employers to investigate the suitability of the program and current employment prospects for graduates.

The **Legal Education Society of Alberta (LESA)** offers professional development courses for those who are already employed in legal support staff positions.

Employment and Advancement

(section revised JANUARY 2006)

Paralegals work under the supervision of lawyers in law firms, court systems and the legal departments of large organizations. Graduates of Legal Assistant education programs are usually hired as legal assistants. Full paralegal status and responsibility usually requires additional work experience.

Paralegals are part of the larger National Occupational Classification 4211: Paralegal and Related Occupations. In Alberta, over 75 per cent of people employed in this classification work in the **Professional and Technical Services** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Professional and Technical Services industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

About 5,550 Albertans are employed in the Paralegal and Related Occupations group which is expected to grow 1.9 to 2.9 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 100 to 160 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since paralegals form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for paralegals.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Salaries for legal assistants and paralegals vary considerably depending on location, employer and the person's qualifications.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Paralegal and Related Occupations group working part-time or full-time earned from **$17,400 to $113,600 a year**. The average salary was **$37,000 a year**.

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Association of Professional Paralegals (AAPP) website: www.alberta-paralegal.com/

Legal Education Society of Alberta (LESA) website: www.lesa.org

Related Occupational Profiles

Judicial Clerk
Land Titles Examiner
Lawyer
Legal and Realtime Reporter
Legal Secretary
Library Technician
Word Processing Operator

Related High School Subjects

Information Processing; Language Arts; Legal Studies; Management and Marketing; and Social Studies

Related Post-Secondary Fields of Study

Clerical and Administrative Support

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Park Warden

Produced JANUARY 2006

Park wardens are responsible for natural and cultural resource management, public safety and law enforcement in Canada's national parks.

NOC Number(s): 2224
Minimum Education: 4 years post-secondary education/training
Employment Outlook: Employment turnover plus below average occupational growth in Alberta
Interests: **D M S**

Duties

Park wardens have the following primary responsibilities:

- research, monitor and manage heritage resources in national parks
- provide first aid and search and rescue services to the public and park staff
- enforce the Canada National Parks Act and regulations
- assist in the protection of the heritage resources of the park
- serve as public spokespersons regarding changes, threats and activities in parks.

To accomplish these objectives, they have the following duties and responsibilities:

- monitor and manage resources
- conduct research related to resource management
- co-ordinate forest fire suppression activities
- supervise and train park employees
- offer information and assistance to park visitors, residents and staff
- conduct search and rescue operations as needed
- respond to correspondence, complete reports and prepare budgets
- contribute to park management and operational plans
- supervise the construction or repair of facilities and maintenance of equipment
- conduct statistical surveys
- enforce specific laws and regulations.

Park wardens frequently patrol front and back-country areas of the park by truck, boat or plane, or on foot, skis or horseback. They watch for potential hazards and assess the condition of the park, its wildlife and other natural resources.

Park wardens are trained in first aid and rescue techniques, and respond when people are lost, injured or endangered. They work in co-operation with police, provincial conservation officers, and other resource management and enforcement agencies.

Park wardens spend much of their time implementing resource management plans and conducting environmental assessments to ensure the continued health of park ecosystems. This involves research, monitoring wildlife, capturing animals and relocating them in rare instances when they pose a public safety hazard. In some national parks, park wardens may specialize in resource management, law enforcement or public safety.

Working Conditions

Park wardens work both indoors and outdoors in all types of weather conditions and terrain. Some risk is involved in capturing and handling animals and enforcing regulations. Lifting up to 25 kilograms is routinely required; heavier lifting may be required in some circumstances.

The work may be seasonal or year round. To deal with emergencies, park wardens may be required to be on call during off-duty hours.

Personal Characteristics

Park wardens need the following characteristics:

- a keen interest in all aspects of nature and a serious concern for the environment
- communication skills, tact and self-confidence
- the ability to cope with heavy workloads
- good health and physical conditioning
- an aptitude for outdoor travel such as driving, hiking and riding
- the ability to take on a leadership role and remain calm in stressful situations.

They should enjoy:

- working outdoors in various geographic and weather conditions
- taking responsibility for projects, individually or as part of a team
- compiling information and gathering data and samples
- working with people.

Educational Requirements

The minimum education requirement for park wardens is a recognized bachelor of science degree with an emphasis on natural sciences. Conditions of employment include:

- a valid driver's license
- a valid first aid certificate
- Pleasure Craft Operators Card
- Canadian Firearms Safety Course
- no criminal record.

Experience and expertise in hiking, skiing, boating, mountain climbing, wilderness camping and horseback-riding are definite assets.

In Alberta, the following post-secondary institutions offer recognized programs related to environmental management and conservation enforcement:

- The **University of Alberta** in Edmonton offers a four year Bachelor of Science degree program in Environmental and Conservation Sciences with specializations in conservation biology, environmental economics and policy, land reclamation, and human dimensions of environmental management. The entrance requirement is a high school diploma with a competitive average in English Language Arts 30-1 (or English 30), Pure Math 30 (or Math 30), Chemistry 30, Biology 30 and one other Grade 12 subject. The University of Alberta also offers a four year B.Sc./BA combined degree program in Environmental and Conservation Sciences/Native Studies.
- The **University of Calgary** offers a four year Bachelor of Science degree program in Environmental Science. The entrance requirement is a competitive average in English Language Arts 30-1 (or English 30), Pure Math 30 (or Math 30), Chemistry 30, one of the following: Biology 30, Physics 30 or Math 31 (Biology 30 is required for the Biological Sciences concentration), and another 30 level subject selected from an approved list (Math 31 recommended). Students also must complete at least four full courses with a grade point average of at least 2.80/4.
- The **University of Lethbridge** offers a four year Bachelor of Science degree program in Environmental Science that includes one semester of technology training at Lethbridge Community College. The entrance requirement is an average of 65 per cent in English Language Arts 30-1 (or English 30), Pure Math 30 (or Math 30, or Applied Math 30 and 75 per cent in Athabasca University's Math 101), Biology 30, Chemistry 30 and one other approved Grade 12 subject. Math 31 may be recommended. An approved diploma in a field related to environmental science is required for post-diploma admission.

Post-secondary institutions throughout the province offer diploma and university transfer programs that allow students to apply up to two years of study toward university bachelor's degree programs. It is the student's responsibility to ensure that the courses they choose to take will be accepted for credit at the institution to which they wish to transfer.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

Park wardens are employed by the federal government. On average, 15 to 20 new wardens are hired across Canada each year.

Many post-secondary students gain valuable experience by working in national parks during the summer. They may work as seasonal groundskeepers, equipment operators, maintenance workers, lifeguards, gate attendants or interpretive assistants. Student positions related to warden service include researcher, initial attack (fire) crew, non-native plant crew and patrol person.

Newly employed park wardens gradually take on more responsibility and may advance to more specialized positions in larger parks. Advancement to specialist positions may require a master's degree and considerable experience.

Park wardens are part of the larger National Occupational Classification 2224: Conservation and Fishery Officers. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Public Administration**
- **Forestry and Logging**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 600 Albertans are employed in the Conservation and Fishery Officers occupational group which is expected to grow 0.5 to 1.5 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover. (**Note**: Since park wardens form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for park wardens.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Salaries for park wardens range from $46,000 to $60,000 a year depending on their employment status (seasonal or full-time), responsibilities and qualifications (2006 estimate).

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Conservation and Fishery Officers occupational group working part-time or full-time earned from **$35,900 to $55,700 a year.** The average salary was **$51,400 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Parks Canada website: www.pc.gc.ca

Related Occupational Profiles

Biologist
Bylaw Enforcement Officer
Conservation Officer
Interpretive Naturalist
Police Officer

Related High School Subjects

Community Health; Forestry; Language Arts; Management and Marketing; Mathematics; Physical Education; Science (Biology; and Chemistry); Social Studies; Tourism Studies; and Wildlife

Related Post-Secondary Fields of Study

Environment, Forestry and Related Studies; and Sciences

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Parole/Probation Officer

Produced APRIL 2003

Parole officers and probation officers help offenders integrate into the community and, at the same time, protect the community by supervising offenders. Parole officers are employed by Correctional Services Canada to manage the conditional release of federal and provincial offenders. Probation officers are employed by Alberta Solicitor General to conduct investigations and prepare predisposition and presentence reports, and supervise offenders in the community.

NOC Number(s): 4155.1
Minimum Education: 2 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **S M D**

Duties

Duties vary from one position to another but, in general, parole officers:

- make recommendations regarding the initial placement of an offender in an appropriate federal penitentiary (for any offender who receives a sentence of two years or more, or a suspension of an original federal sentence)
- investigate offenders' past and present behaviours by interviewing other inmates, institutional authorities, police, family and friends of the offender
- plan programs for offenders during their imprisonment
- assess the suitability of penitentiary inmates for release under parole and statutory release, and submit recommendations to the National Parole Board
- develop liaisons and networks with other parole officers, social welfare and community agencies, staff in correctional institutions, psychiatric facilities and after care agencies
- supervise those who have already been released on parole, day parole or statutory release
- offer guidance and direction to parolees in dealing with job-related and personal problems.

Those working in the private sector are called parole supervisors. They are contracted to supervise parolees who live in communities and rural areas where Correctional Services Canada does not maintain an office.

In general, probation officers:

- prepare predisposition and presentence reports, as requested by the court, which describe the convicted offender's personal and social life, and make recommendations for sentence including conditions which may be imposed by a court order
- gather information through interviews with offenders, police, family, friends, employers, school authorities, etc. as a basis for the court to determine an appropriate sentence and to assist in casework and the supervision of offenders
- supervise individuals who have been released on a pretrial release; sentenced by the court to probation, community service work or conditional sentences/supervision; or released by a correctional or young offender centre on a temporary pass
- administer and supervise individuals accepted to the alternative measures, extra judicial sanctions and fine option programs.

Parole and probation officers must be aware of available community resources such as psychiatric services and addiction treatment centres, in addition to having a working knowledge of client behaviour and motivation.

Working Conditions

Parole and probation officers work in offices, courthouses and, in the case of parole officers, penitentiaries. They may also visit offenders' homes and workplaces. They sometimes work long hours, including some evenings and weekends, to interview offenders and their associates.

Personal Characteristics

Parole and probation officers need the following characteristics:

- maturity and good judgement
- strong interpersonal skills
- strong verbal and written communication skills for writing and presenting reports.

They should enjoy dealing with and helping people, having clear rules and organized methods, and supervising others.

Educational Requirements

(section revised SEPTEMBER 2005)

Parole officers employed by the federal government must have at least a **bachelor's degree** in Arts (BA) with a specialization in sociology, psychology or criminology, or in Social Work (BSW). Some parole officers have a master's degree or equivalent. Candidates for federal government positions must be able to pass the Canada Fitness Test which includes standards for muscular strength and endurance, flexibility and cardio-respiratory fitness.

Parole supervisors employed in the private sector must have at least a **two year college diploma** in a related field.

Probation officers employed by the provincial government must have at least a **two year diploma or a university degree in a directly related field.** An equivalent combination of education and experience may be accepted.

Knowledge of native culture or languages is an asset for parole and probation officers.

In Alberta, the following post-secondary education institutions offer diploma and degree programs that are at least two years in length and specifically in criminology or corrections. For information about other related degree programs, see the Psychologist, Sociologist and Social Worker occupational profiles.

- **Athabasca University** offers a four year Bachelor of Professional Arts degree program in Criminal Justice. This program is available to students who have a two-year diploma in criminal justice-related areas from an accredited college or technical institute program.
- **Bow Valley College** in Calgary offers a two year Correctional Services diploma program. The entrance requirements are a high school diploma with English 30 (30-1) or 33 (30-2) or equivalent.
- **Grant MacEwan College** in Edmonton offers a two year Correctional Services diploma program that is also available part-time and through distance delivery. Applicants must have a high school diploma with at least 65 per cent in English 30 or 75 per cent in English 33, or equivalent, and be at least 18 years of age.
- **Lethbridge Community College** offers a two year Corrections Diploma program and a Bachelor of Applied Arts - Corrections Studies program. The entrance requirement for the diploma program is a high school diploma or equivalent. The entrance requirement for the degree program is successful completion of the diploma program or equivalent. Lethbridge Community College also offers a Criminal Justice certificate designed for aboriginal people.
- **Mount Royal College** in Calgary offers a four year applied degree program in Justice Studies. The entrance requirement is a high school diploma with English 30, Pure or Applied Math 30 and Social Studies 30, or equivalent.
- The **University of Alberta** in Edmonton offers a four year Bachelor of Arts degree program in criminology. The entrance requirement is completion of one year of an undergraduate degree program (usually an Arts program) with a minimum grade point average of 6.0/9. This is a quota program so higher than minimum marks may be required for admission.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

(section revised JANUARY 2006)

Parole officers are employed by Correctional Services Canada and private agencies under contract to Correctional Services Canada. Those employed by Correctional Services Canada must complete a probationary period of one year. Advancement to section supervisor and area manager positions is based on merit and experience.

Probation officers are employed by the government of Alberta.

Parole and probation officers are part of the larger National Occupational Classification 4155: Probation and Parole Officers and Related Occupations. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Public Administration**
- **Health Care and Social Assistance**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 350 Albertans are employed in the Probation and Parole Officers and Related Occupations group which is expected to grow grow 1.1 to 2.1 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover. (**Note**: Since parole and probation officers form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for parole and probation officers.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Probation and Parole Officers and Related Occupations occupational group working part-time or full-time earned from **$20,600 to $68,100 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Correctional Services Canada website: www.csc-scc.gc.ca

Alberta Solicitor General website: www4.gov.ab.ca/just

Related Occupational Profiles

Addictions Counsellor
Child and Youth Care Worker
Correctional Services Worker
Social Worker

Related High School Subjects

Language Arts; Languages (other than English); Legal Studies; Mathematics; Physical Education; and Social Studies

Related Post-Secondary Fields of Study

Social Sciences, Law and Religious Studies; and Social, Community and Protective Services

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For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Parts Technician

Apprenticeship and Industry Training

Produced FEBRUARY 2006

Parts technicians dispense parts and manage inventories of automotive, heavy duty, farm implement, industrial, recreational vehicle, jobbers, plumbing, electrical or other parts.

NOC Number(s): 1472
Minimum Education: Apprenticeship Trade - Grade 10
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **M O S**

Duties

Duties and responsibilities vary depending on the size and type of business (wholesale, retail or warehouse distribution business) and the types of parts involved. Some businesses specialize in a particular type of equipment such as automotive parts; others stock hardware supplies as well as parts for several makes of machinery. However, in general, parts technicians:

- sell supplies and parts
- order parts and keep inventories
- receive supplies and store them according to a pre-arranged system
- organize and ship exchange parts and returns
- keep price lists and catalogues updated
- prepare statements
- submit bills
- keep records
- receive payments.

Parts technicians may be responsible for stock handling, warehousing and identifying and cataloguing parts and assemblies as well as ordering, receiving, inspecting, sorting, pricing and selling.

Working Conditions

Parts technicians may work indoors or outdoors. Working hours vary depending on the industry. Parts technicians may be required to lift items weighing over 25 kilograms.

Personal Characteristics

Parts technicians need the following characteristics:

- good customer service skills
- basic math skills
- the ability to pay careful attention to details such as parts catalogues and electronic inventory systems.

They should enjoy working with people.

Educational Requirements

To work in Alberta, parts technicians must be ONE of the following:

- registered apprentices
- certified journeymen
- working for an employer who is satisfied that they have the skills and knowledge expected of certified journeymen
- self-employed.

To **register** with **Alberta Apprenticeship and Industry Training**, apprentices must:

- have at least an Alberta Grade 10 education (or equivalent) or pass an entrance exam
- find a suitable employer who is willing to hire and train an apprentice. Most employers prefer to hire high school graduates and may select apprentices from among their current employees. Some employers require their parts technicians to have working experience with the type of product sold (e.g. automotive or farm implement parts) so they can answer customer questions about product use.

The **term of apprenticeship** is three years (three 12-month periods) that include a minimum of 1,500 hours of on-the-job training and eight weeks of technical training in first year and a minimum of 1,575 hours of on-the-job training and six weeks of technical training in the second and third. High school students can become apprentices and gain credits toward apprenticeship training and a high school diploma at the same time through the Registered Apprenticeship Program (RAP).

Applicants who have related training or work experience may be eligible for credit or certification.

Parts technician apprentices may attempt the Interprovincial Exam in the final period of their apprenticeship training and, if successful, are granted a Red Seal (which is recognized in most parts of Canada).

Technical training is arranged by Alberta Apprenticeship and Industry Training and is currently offered at:

- Lakeland College in Vermilion
- Lethbridge Community College
- the Northern Alberta Institute of Technology (NAIT) in Edmonton and Fairview
- the Southern Alberta Institute of Technology (SAIT) in Calgary.

Weekly apprenticeship training (WATS) is also offered by Lethbridge Community College, NAIT and SAIT.

Pre-employment programs for prospective apprentices and continuing education programs for journeymen may be offered on an as needed basis by the institution(s) listed above or other schools.

Employment and Advancement

Parts technicians are employed by wholesale and retail businesses, or warehouse distributors that deal with all types of parts. Apprentice parts technicians may begin working as a stock or receiving clerk (for more information, see the Shipper and Receiver occupational profile) or as drivers. As they become acquainted with the different parts and their applications and the stockroom system, they can be promoted to parts counter positions.

Experienced parts technicians who have business and technical experience may advance to supervisory positions, such as parts department manager, store manager or even store owner. Alberta certified journeyman parts technicians who have the supervisory or management skills required by industry may apply for an Achievement in Business Competencies Blue Seal by contacting Alberta Apprenticeship and Industry Training. With some sales experience, a parts technician can move into a sales representative position.

Parts technicians are part of the larger National Occupational Classification 1472: Storekeepers and Parts Clerks. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Retail Trade**
- **Wholesale Trade**
- **Public Administration**
- **Transportation and Warehousing**
- **Oil and Gas Extraction**
- **Repair, Maintenance, Personal and Other Services**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 4,500 Albertans are employed in the Storekeepers and Parts Clerks occupational group which is expected to grow 1.1 to 2.1 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 40 to 100 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since parts technicians form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for parts technicians.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

An apprentice parts technician earns at least 65 per cent of the journeyman wage rate in their place of employment in the first year, 75 per cent in the second and 85 per cent in the third. According to the Alberta Provincial Apprenticeship Committee for this trade, journeyman wage rates vary, but generally range from **$13 to $25 an hour plus benefits**, based on local market conditions (2004 estimate).

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Storekeepers and Parts Clerk occupational group working part-time or full-time earned from **$13,900 to $95,000 a year.** The average salary was **$35,100 a year.**

Other Sources of Information

Alberta Apprenticeship and Industry Training website: www.tradesecrets.org

Motor Dealers' Association of Alberta website: www.mdaofalberta.com

Related Occupational Profiles

Shipper and Receiver
Warehousing Professionals

Related High School Subjects

Information Processing; Language Arts; Logistics; Mathematics; Mechanics; and Physical Education

Related Post-Secondary Fields of Study

Trades, Industrial and Related Training

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Pathologist

Produced DECEMBER 2004

Pathologists are physicians who diagnose diseases such as cancer and provide key laboratory diagnostic services. Some pathologists also play a key role in forensic investigations.

NOC Number(s): 3111.2
Minimum Education: 8 + years post-secondary education/training
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: **I O D**

Duties

Pathologists use a wide variety of laboratory analytical techniques (e.g. light and electron microscopy, analytical chemistry, culturing micro-organisms and cells, molecular genetics) to investigate the causes, progress and consequences of diseases, and determine the nature of diseases. They provide diagnoses to patients' surgeons and physicians, and advise physicians regarding the management of diseases (e.g. cancer, anemia and diabetes) and infections (e.g. AIDS). Often, attending physicians' treatment decisions are based on pathologists' recommendations.

In general, pathologists:

- supervise or perform laboratory diagnostic and screening tests
- examine tissue biopsy samples and diagnose surgical specimens
- advise other health care workers on the application and usefulness of newly available tests
- conduct autopsies to determine the causes and mechanisms of illness and death
- conduct research
- teach medical students and pathologists-in-training
- educate trainees and practicing physicians regarding the use of laboratory services
- lead and provide guidance in the use of information technology in medical practice
- lead quality and utilization management activities in hospitals.

Pathologists specialize in general pathology or subspecialties such as:

- **anatomical pathology** - diagnosing disease by examining tissues or cytologic preparations
- **forensic pathology** - determining the cause of death
- **hematopathology** - diagnosing diseases of blood, bone marrow and lymph nodes, and providing consultative services regarding the use of blood or blood products for transfusion
- **medical biochemistry** - supervising the chemical section of medical laboratories and diagnosing disease from chemical test results
- **medical microbiology** - identifying causes of infection and recommending treatments, and providing consulting services or supervising hospital infection control and surveillance programs
- **neuropathology** - diagnosing nerve, brain and muscle diseases.

Working Conditions

Pathologists work in hospital and community laboratories as part of a team with other pathologists, scientists and medical laboratory technologists. They may be exposed to infectious agents in a controlled setting.

Personal Characteristics

Pathologists need the following characteristics:

- the intellectual ability required to successfully complete the academic training and keep up to date with new developments in medicine
- emotional strength and maturity
- good communication and interpersonal skills

- an interest in teaching others about new developments.

They should enjoy finding solutions to problems, using equipment and instruments to perform tasks requiring precision, and directing the work of others.

Educational Requirements

The education requirement is **a Medical Doctor (MD) degree followed by a minimum of five years** of specialization in laboratory medicine, and successful completion of a Royal College of Physicians and Surgeons of Canada exam.

In Alberta, the following institutions offer MD and specialty training programs.

- The **University of Alberta** in Edmonton offers an MD program and specialty training in general and anatomical pathology, and hematopathology. The entrance requirement for the MD program is satisfactory completion of **at least** two years of university studies with courses in organic and inorganic chemistry, English, physics, biology and statistics.
- The **University of Calgary** offers an MD program and specialty training in anatomic pathology and neuropathology. The entrance requirement for the MD program is completion of at least three years of recommended Arts and Sciences courses at a recognized post-secondary institution.

Because admission to MD programs is based on quotas, many applicants who fulfil the entrance requirements cannot be accepted. Successful applicants are selected on the basis of:

- academic grades
- letters of recommendation
- personal interviews
- the results of a Medical College Admission Test (MCAT).

The required university courses may be taken entirely at the University of Calgary or the University of Alberta or, in part, at other post-secondary institutions.

Post-secondary institutions across Alberta offer university transfer programs that allow students to apply up to two years of study toward university Bachelor's degree programs. It is the student's responsibility to ensure that the courses they choose to take will be accepted for credit at the institution to which they wish to transfer. When planning their university studies, prospective students should contact both Faculty of Medicines' admissions offices to ensure that they acquire all of the necessary pre-requisites.

In general, the admission requirement for university and university transfer programs is a high school diploma or equivalent with a specified minimum average in English 30, Pure Math 30 and three other appropriate Grade 12 subjects (usually Biology 30, Physics 30 and Chemistry 30).

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Selection of pathology residents is primarily through the Canadian Resident Matching Service.

Other Requirements

Under Alberta's Medical Profession Act, you must be a registered member of the College of Physicians and Surgeons of Alberta (CPSA) to practice medicine in Alberta.

Employment and Advancement

Pathologists work in laboratories in:

- hospitals and universities
- government departments
- the private sector.

Pathologists may be involved in medical research, health care administration, overseas service or teaching in a Faculty of Medicine as well as provide diagnostic services.

Pathologists are employed in the **Health Care and Social Assistance** industry.

Over 100 pathologists are employed in Alberta. There is a current shortage of pathologists in Alberta, Canada and many other countries. This shortage is expected to become more marked as people retire from the occupation and demand for pathologists' services continues to grow due to the demands of Canada's aging population. However, government health care funding for new positions may not meet these needs completely.

Salary

Pathologists negotiate contracts with regional health authorities and other employers.

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Canadian Association of Pathologists (CAP) website: cap.medical.org

Related Occupational Profiles

Biochemist
Forensic Laboratory Analyst
Geriatric Medicine Specialist
Microbiologist
Pediatrician
Physician
Psychiatrist

Related High School Subjects

Community Health; Language Arts; Mathematics; and Science (Biology; Chemistry; and Physics)

Related Post-Secondary Fields of Study

Health Care and Medical Sciences

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Pediatrician

Produced NOVEMBER 2004

Pediatricians are specialist physicians who provide medical care for children from birth through adolescence.

NOC Number(s): 3111.1
Minimum Education: 8 + years post-secondary education/training
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: **I S D**

Duties

Pediatricians work with healthy children and children who have acute or chronic health problems. In general, they:

- examine children and assess their health, growth and development
- diagnose problems such as throat and respiratory infections, communicable diseases, cancer, congenital abnormalities or developmental problems
- order laboratory tests, x-rays and other diagnostic procedures
- prescribe medications and treatments, or refer patients to other specialists
- give parents advice on how to treat and prevent illness
- act as consultants for other physicians
- act as advocates for patients and families
- maintain comprehensive medical records.

Pediatricians may work as part of a health care team that includes other doctors, nurses, therapists and medical technologists.

Pediatricians may:

- work in primary care (seeing mostly well children who may have minor illnesses or growth and development concerns)
- work as secondary-level consultants (seeing children who have been referred by other physicians because they need additional expert diagnosis, treatment or care)
- work as tertiary-level consultants in subspecialties such as pediatric cardiology or pediatric neurology
- teach and conduct medical research relating to childhood diseases.

Working Conditions

Pediatricians work in offices, hospitals and universities that are usually located in urban centres. They may work long hours and often are called to the hospital in the evenings and on weekends.

Personal Characteristics

Pediatricians need the following characteristics:

- the intellectual ability required to successfully complete the academic training and keep up to date with new developments in medicine
- the ability to get along with people (especially children)
- emotional strength and maturity
- good communication skills
- leadership skills.

They should enjoy co-ordinating information, dealing with people and directing the work of others.

Educational Requirements

The training required to become a pediatrician is long and academically demanding:

- two to four years of pre-medical university studies approved by a Faculty of Medicine
- a three to four year Medical Doctor (MD) program
- four years of residency in an accredited university department of pediatrics.

In Alberta, MD programs are offered by the following institutions:

- The **University of Alberta** in Edmonton. The entrance requirement is satisfactory completion of at least two years of university studies with courses in organic and inorganic chemistry, biochemistry, English, physics, biology and statistics.
- The **University of Calgary**. The entrance requirement is completion of at least three years of recommended Arts and Sciences courses at a recognized post-secondary institution.

Because these are quota programs, many applicants who fulfil the entrance requirements cannot be accepted. Successful applicants are selected on the basis of:

- academic grades (usually, an A average in pre-medical studies is required to gain admission)
- letters of recommendation
- personal interviews
- the results of a Medical College Admission Test (MCAT).

The required university courses may be taken entirely at the University of Calgary or the University of Alberta or, in part, at other post-secondary institutions.

Post-secondary institutions across Alberta offer university transfer programs that allow students to apply up to two years of study toward university Bachelor's degree programs. It is the student's responsibility to ensure that the courses they choose to take will be accepted for credit at the institution to which they wish to transfer. When planning their university studies, prospective students should contact both Faculty of Medicines' admissions offices to ensure that they acquire all of the necessary pre-requisites.

In general, the admission requirement for university and university transfer programs is a high school diploma or equivalent with a specified minimum average in English 30, Pure Math 30 and three other appropriate Grade 12 subjects (usually Biology 30, Physics 30 and Chemistry 30).

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

After completing an MD program, prospective pediatricians take an additional four years of post-graduate training. This training usually takes the form of seminars and directed reading programs and residencies with increasing responsibility. Subspecialty training (e.g. in pediatric cardiology or oncology) requires a further one to three years of residency.

Other Requirements

Under Alberta's Medical Profession Act, you must be a registered member of the College of Physicians and Surgeons of Alberta (CPSA) to practice medicine in Alberta.

Employment and Advancement

(section revised JANUARY 2006)

Most pediatricians set up private practices in regional centres. Some are employed by government or education institutions.

Experienced pediatricians may move into medical research, health care administration or teaching in a Faculty of Medicine.

Pediatricians are part of the larger National Occupational Classification 3111: Specialist Physicians. In Alberta, most people employed in this classification work in the **Health Care and Social Assistance** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Health Care and Social Assistance industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 2,600 Albertans are employed in the Specialist Physicians occupational group which is expected to grow 3.5 to 4.5 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 90 to 120 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since pediatricians form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for pediatricians.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Most pediatricians in private or group practice are paid by provincial health insurance programs according to the volume and type of services they provide. Therefore, their earnings vary greatly.

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Medical Association (AMA) website: www.albertadoctors.org

Canadian Paediatric Society (CPS) websites: www.cps.ca and www.caringforkids.cps.ca

College of Physicians and Surgeons of Alberta (CPSA) website: www.cpsa.ab.ca

Medical Council of Canada (MCC) website: www.mcc.ca

Royal College of Physicians and Surgeons of Canada (RCPSC) website: rcpsc.medical.org

Related Occupational Profiles

Geriatric Medicine Specialist
Pathologist
Physician
Psychiatrist
Sport Medicine Physician

Related High School Subjects

Community Health; Language Arts; Mathematics; and Science (Biology; Chemistry; and Physics)

Related Post-Secondary Fields of Study

Health Care and Medical Sciences

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Personal Care Attendant

Produced JANUARY 2005

Personal care attendants provide personal assistance and support services for elderly, disabled, acute or chronically ill people who require short term assistance or ongoing support.

NOC Number(s): 3413, 6471.1
Minimum Education: At least Grade 10
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **S M o; S M o**

Duties

Personal care attendants work in a variety of settings: private homes, government agencies or group homes, hospitals, continuing care and assisted living facilities. Those who work in private homes may work with a variety of clients in different homes every day or work in one home for an extended period of time.

Personal care attendants have a variety of job titles such as health care aide, personal support aide, client care attendant or home support worker. Whatever their title, they provide the physical and emotional support clients need to be as independent as possible.

Depending on the circumstances and their clients' and supervisors' instructions, personal care attendants may assist clients with a variety of personal care needs:

- dressing
- eating
- bathing and grooming (hair, nails, mouth, foot, skin care)
- going to the bathroom
- moving from one position or place to another
- communicating with family members and others.

They may also:

- perform light housekeeping duties (e.g. make beds)
- do laundry
- cook meals or prepare special dietary foods
- purchase groceries, pick up prescriptions or run other errands
- care for children when parents or other responsible adults are absent or need help
- accompany clients to physicians' offices or on outings.

Where appropriate, personal care attendants may perform tasks delegated by registered nurses or physiotherapists including:

- checking height, weight and vital signs
- changing non-sterile dressings and bandages
- operating special equipment such as lifts, wheelchairs and hydraulic tub seats
- assisting with topical medication or administering medication from dosettes or bubblepacks
- collecting specimens (urine, stool and sputum)
- doing simple range of motion exercises
- applying support garments and medical devices (e.g. braces, artificial limbs, hearing aids, elastic stockings)
- taking care of urinary drainage equipment, ostomy care or bowel routines (enemas, suppositories)
- passing a tube into the bladder to drain urine
- caring for clients receiving oxygen
- testing blood sugars with a glucometer
- keeping records of these activities.

Working Conditions

There is considerable physical activity involved in housekeeping activities and helping people to move, groom themselves and dress. Personal care attendants may be required to lift items weighing up to 25 kilograms or stand for long periods of time. Some knowledge of body mechanics and proper lifting techniques is required to avoid injury.

Other working conditions in this occupation vary greatly. Personal care attendants may work in surroundings ranging from comfortable to deplorable. Some clients may be challenging; others pleasant and co-operative. Dealing with people in pain or those who are unco-operative can be frustrating and stressful.

Hours of work also vary. Since many agencies offer 24 hour service, shift work (including weekends) may be required.

Personal Characteristics

Personal care attendants need the following characteristics:

- good physical and mental health
- mature and dependable
- understanding, patient and non-judgmental
- willing and able to keep information about clients confidential
- able to communicate effectively and get along with people
- able to use tact and judgement in dealing with difficult situations.

Those who work in private homes also must be:

- flexible
- able to work relatively independently
- well organized.

Personal care attendants should enjoy:

- working with and assisting people
- having clear rules and guidelines for their work
- using tools and equipment for routine housekeeping duties.

Educational Requirements

(section revised DECEMBER 2005)

There are **no formal education requirements** for employment in this occupation. However, employers generally require job applicants to have at least Grade 10 reading and comprehension skills, and satisfy security clearance requirements. Most prefer to hire applicants who have related training or experience.

In Alberta, the following institutions offer programs designed to prepare graduates for employment in home, continuing care or hospital settings:

- **Bow Valley College** in Calgary offers a 20-week Health Care Aide and a 16-week Home Care Attendant (Integrated) certificate program.
- **Bredin Institute-Centre for Learning** in Edmonton offers an 18-week Health Care Assistant certificate program and an 18-week Human Services Worker certificate program.
- **Career Designs Inc.**, a private vocational school in Calgary, offers a 14-week Personal Care Attendant certificate program.
- **CDI College of Business, Technology and Healthcare**, a private vocational school in Calgary and Edmonton, offers a 24-week Personal Care Attendant certificate program.
- **Calgary Board of Education Chinook Learning Services** offers an eight-course Community Support Worker Certificate - Personal Care Attendant program.
- **Columbia College**, a private vocational school in Calgary, offers a full-time (10 weeks) and part-time (20 weeks) Personal Care Attendant program. Columbia College also offers a full-time (25 weeks) and part-time (50 weeks) Human Services Professional diploma and certificate programs.
- **Community Care Educational Centre Inc.**, a private vocational school in Red Deer, offers a 16-week Health Care Assistant program.
- **Lakeland College** in Lloydminster offers a 16-week Personal Support Aide Certificate of Achievement program. Graduates may take a second semester to earn a Community Support Worker Certificate.
- **Lethbridge Community College** offers a 20-week Health Care Aide program that includes a six week practicum.
- **Medicine Hat College** offers a Health Care Aide program that may be taken full-time (20 weeks) or self-paced.

- **Nightingale Academy of Health Services Inc.**, a private vocational school in Edmonton, offers a 17-week Health Care Support Worker program.
- **NorQuest College** in Edmonton offers a 20-week Health Care Aide program.
- **Northern Lakes College** offers a 20-week Health Care Aide certificate program. The program is offered in a supported learning model to multiple Northern Lakes College campuses.
- **Pare Labrecque Training Centre**, a private vocational school in Sylvan Lake, offers a 16-week Specialized Geriatric Care Attendant program.
- **Portage College** in Lac La Biche offers a 20-week Health Care Aide program.
- **Red Deer College** offers a 20-week Health Care Aide program.
- **Reeves College**, a private vocational school in Edmonton, offers a 40-week Community Health Care program.
- **Robertson College**, a private vocational school in Calgary, offers a 20-week Health Care Aide/Personal Support Worker program.
- **Sprott-Shaw Community College**, a private vocational school in Calgary and Edmonton, offers a 27-week Resident Care Attendant program and a 50-week Community Support Worker program.
- **The Excel Academy**, a private vocational school in Edmonton, offers a 17-week Community Support Worker program.
- **TLC Edmonton: Training for Live-in Caregivers**, a private vocational school in Edmonton, offers a 26-week TLC Edmonton: Training for Live-in Caregivers program.
- **Training Inc.**, a private vocational school in Lethbridge, offers a 12-week Health Care Aid program.
- **University of Alberta** in Camrose offers a part-time (evenings) Personal Care Aide/Attendant certificate program.

Admission requirements vary from one program to another but, in general, applicants must:

- be at least 18 years of age
- have a high school diploma or equivalent, or qualify for mature student admission and have Grade 10 or better reading and writing skills
- have Standard First Aid, Heart Saver or CPR certification
- provide a security clearance or child welfare check
- attend an interview.

Applicants also may be required to submit an immunization record, letters of reference or a copy of their driver's license.

Other pre-employment, continuing education and in-service training programs are offered by a variety of organizations across Alberta on an as-needed basis. Prospective personal care attendants are advised to discuss training options with several local employers before choosing a program.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

(section revised JANUARY 2006)

Personal care attendants are employed by:

- clients
- private agencies
- continuing care facilities
- government social service departments and agencies
- non-profit charitable agencies
- home care and family service associations
- hospitals.

Those who have considerable experience may move into supervisory or management positions. However, advancement opportunities are limited without additional education.

Personal care attendants are part of the larger National Occupational Classification 6471: Visiting Homemakers, Housekeepers and Related Occupations. In Alberta, most people employed in this classification work in **Health Care and Social Assistance** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Health Care and Social Assistance industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)

- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 4,200 Albertans are employed in the Visiting Homemakers, Housekeepers and Related Occupations group which is expected to grow 1.6 to 2.6 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 60 to 110 **new** positions will be created each year **in addition** to job openings created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Salaries for personal care attendants vary considerably depending on the employer and the employee's responsibilities, experience and training.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Visiting Homemakers, Housekeepers and Related Occupations group working part-time or full-time earned from **$9,900 to $30,800 a year.** The average salary was **$18,500 a year.**

For information about current collective agreements in the public and not-for-profit sectors, see the Health Sciences Association of Alberta (HSAA) website.

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Health Sciences Association of Alberta (HSAA) website: www.hsaa.ca

Related Occupational Profiles

Domestic Housekeeper
Licensed Practical Nurse
Nanny
Psychiatric Aide
Rehabilitation Practitioner

Related High School Subjects

Community Health; Cosmetology Studies; Foods; Language Arts; Mathematics; and Physical Education

Related Post-Secondary Fields of Study

Personal and Food Services

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Personal Property/Equipment Appraiser

Produced DECEMBER 2003

Personal property and equipment appraisers estimate the value of personal and household items, business assets, vehicles and/or machinery, and prepare reports for owners, buyers, insurance companies, lending institutions, government departments, lawyers, creditors and others.

NOC Number(s): 1235.3
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus below average occupational growth in A!berta
Interests: **M d s**

Duties

Personal property appraisers may judge the worth of several types of personal property or specialize in goods such as antiques and collectibles, works of art, jewellery, commercial and business assets, stamps and coins, musical instruments, watches and clocks, dolls and toys, fabric goods, firearms or old books. Equipment appraisers judge the worth of automobiles, trucks and/or heavy equipment.

Their duties and responsibilities vary depending on their area of specialization but, in general, personal property and equipment appraisers:

- inspect goods in people's homes, businesses or other places
- note age, style and overall condition
- look for flaws that may or may not decrease the value of an item
- determine if items are originals or copies, where appropriate
- gauge the appeal of items to potential buyers at auctions or estate sales
- consult reference materials such as catalogues and directories, when required
- write reports describing items and estimating fair market value, replacement or reproduction value, or liquidation value (if required for settling debts)
- defend their appraisals in court, when required.

Working Conditions

Personal property and equipment appraisers work in a wide variety of environments ranging from farm sheds to high rise office towers. Their hours of work also vary. Those employed by insurance companies, lending institutions or auction houses may work standard business office hours with occasional evening or weekend work required. Self-employed appraisers often work long, irregular hours that include evenings, weekends and holidays.

Personal Characteristics

Personal property and equipment appraisers need the following characteristics:

- honesty and integrity
- tact and good communication skills
- good decision-making skills and a willingness to accept responsibility for decisions
- the ability to deal effectively with people who may be under a great deal of stress
- the ability to remain objective when pressured by property owners who want to influence appraisal values
- the ability to maintain client confidentiality.

They should enjoy analyzing information to determine values and dealing with all kinds of people.

Educational Requirements

Personal property appraisers and equipment appraisers need a **combination of related post-secondary education and years of experience in their area(s) of specialization**. For example, fine art appraisers need a bachelor's or master's degree in art history plus experience working in art galleries or museums. Jewellery appraisers need a diploma or certificate from a recognized school plus related work experience. Equipment appraisers need years of related sales and technical experience. Appraisers' qualifications are often examined in court to establish the appraiser's credibility as an expert witness.

Prospective appraisers should discuss their career and education plans with people working in the relevant personal property appraisal field before enrolling in an education program.

Post-secondary education institutions throughout Alberta offer certificate, diploma and degree programs and university transfer programs. For information about education programs related to jewellery, see the Gemmologist and Jeweller occupational profiles.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

(section revised JANUARY 2006)

Personal property and equipment appraisers may be employed by:

- auction houses
- art galleries
- antique shops
- second hand stores
- retail jewellery stores
- appraisal firms
- lending institutions
- insurance companies.

Self-employed appraisers may provide services for any of the above or for property owners who want to value their property before dissolving a marriage or partnership, insuring property, selling it, using it as collateral for loans, or making tax-deductible charitable donations. Self-employed appraisers must pay business overhead costs from their earnings and should have errors and omissions insurance. Work in some specializations (e.g. antique automobiles) may be seasonal in Canada.

Personal property and equipment appraisers usually start their careers in other occupations and move into the appraisal field after gaining related expertise. For example, they may start in new or used goods retail outlets, auction houses, museums or art galleries. In large organizations, experienced appraisers may move into supervisory or management positions. For self-employed appraisers, advancement generally takes the form of building a reputation and larger client base.

Personal property appraisers are part of the larger National Occupational Classification 1235: Assessors, Valuators and Appraisers. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Finance, Insurance and Real Estate**
- **Public Administration**
- **Professional and Technical Services**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above),
- **location** in Alberta,
- **employment turnover** (work opportunities generated by people leaving existing positions),
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before), and
- **size of the occupation**.

Over 1,350 Albertans are employed in the Assessors, Valuators and Appraisers occupational group which is expected to grow 0.5 to 1.5 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover. (**Note**: Since personal property and equipment appraisers form only a small part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for personal property and equipment appraisers.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised SEPTEMBER 2005)

Appraisers' earnings vary considerably, depending on the types of property they appraise and their experience and qualifications. Self-employed appraisers charge a fee for each appraisal based on the time it takes to do the appraisal, the distance travelled and the type of report required.

According to the **2005 Alberta Wage and Salary Survey**, Albertans working part-time or full-time in the Appraisers occupational group earned **up to $136,700 a year.** The average salary was **$52,900 a year.**

Most personal property and equipment appraisers earn considerably less than the top of this range suggests.

Other Sources of Information

Post-secondary institution calendar and website (see Educational Requirements above)

American Society of Appraisers website: www.appraisers.org

Canadian Personal Property Appraisers Group website: www.cppag.com

Equipment Appraisers Association of North America website: www.eaana.org

International Society of Appraisers website: www.isa-appraisers.org

Related Occupational Profiles

Assessor
Customs Broker
Gemmologist
Insurance Adjuster
Jeweller
Real Estate Appraiser

Related High School Subjects

Fashion Studies; Fine Arts (Visual Arts); Language Arts; Management and Marketing; Mathematics; Mechanics; and Social Studies

Related Post-Secondary Fields of Study

Agriculture and Related Technologies; Business, Management and Administrative Studies; Engineering and Science Technologies; Fine Arts and Performing Arts; Human Ecology, Fashion and Food Sciences; and Trades, Industrial and Related Training

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For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Pest Control Operator

Produced MARCH 2005

Pest control operators use a variety of methods to control and prevent the spread of insects and other pests that may infest private homes, restaurants, warehouses, business establishments and surrounding areas.

NOC Number(s): 7444
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus below average occupational growth in Alberta
Interests: O M I

Duties

In general, pest control operators:

- inspect buildings and surrounding areas to detect signs of infestation by insects or other pests (e.g. rodents or pest bird species)
- monitor the area to determine if treatment is necessary
- determine the type of treatment necessary (sanitation, exclusion or habitat modification) and the cost to the client
- treat the infested area with the appropriate pesticide or set sticky or mechanical traps.

When working with toxic materials, pest control operators must observe safety precautions such as:

- taking care to prevent pesticide being placed where children, pets or other non-target animals may come in contact with it
- wearing rubber gloves, protective clothing and respirators when mixing or handling pesticides to prevent skin contact and to avoid breathing in pesticides

Pest control operators generally have assigned routes. On that route, they are responsible for sales work, informing customers about conditions that attract pests and conducting periodic inspections to detect signs of possible re-infestation.

Working Conditions

Because insects, rodents and birds are most active in spring and summer, pest control operators are busiest during those seasons. Most work is done during the day but some customers want the work done in the evenings or on weekends when their operations are closed to the public.

Pest control operators work indoors and outdoors in all kinds of weather. Occasionally, they may have to crawl into dirty or dusty places to check infestation sources and administer the necessary treatments, or lift items weighing up to 25 kilograms. Safety precautions are required when handling toxic materials. Yearly medical examinations and blood tests are recommended.

Personal Characteristics

Pest control operators need the following characteristics:

- good health and stamina with no physical conditions such as asthma, bronchitis or high blood pressure
- good communication and interpersonal skills for dealing with customers.

They should enjoy operating mechanical and electric sprayers, having clear rules and organized methods for their work, and working with people.

Educational Requirements

Pest control operators are **trained on the job.**

Employers generally prefer to hire applicants who are at least 18 years of age and have a high school diploma with courses in biology and a valid driver's licence.

Other Requirements

In Alberta, anyone applying a commercial pesticide (insecticide, herbicide, fungicide, etc.) must be certified or supervised by someone who is certified.

To become a certified structural pest control pesticide applicator, an individual must successfully complete Lakeland College's Legislation and Safety core course and **either** the nineteen lesson Purdue Pest Control Technology Correspondence Course **or** the British Columbia Structural Integrated Pest Management Pesticide Applicator Certificate.

Employment and Advancement

(section revised JANUARY 2006)

Most pest control operators are employed by privately owned and operated pest control firms. Some operators are employed by municipal government departments responsible for maintaining recreational facilities and other municipal buildings.

Experienced pest control operators may move into supervisory, management or trainer positions. Self-employment is also an option but this is a highly competitive field.

Pest control operators are part of the larger National Occupational Classification 7444: Pest Controllers and Fumigators. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Management, Administrative and Support Services**
- **Public Administration**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 100 Albertans are employed in the Pest Controllers and Fumigators occupational group which is expected to grow 0.6 to 1.6 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Salaries for pest control operators vary depending on location and the operator's qualifications. Those employed in the private sector may be paid commissions for the new business they attract.

Other Sources of Information

Alberta Environment - Pesticide Management website: www.gov.ab.ca/env/protenf/pesticide/

Related Occupational Profiles

Greenhouse Operator
Nursery Operator

Related High School Subjects

Language Arts; Management and Marketing; Mathematics; Physical Education; and Science (Biology; and Chemistry)

Related Post-Secondary Fields of Study

Personal and Food Services

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Pet Groomer

Produced JULY 2003

Pet groomers shampoo, clip and groom dogs, cats and other pets to improve and maintain their hygiene, comfort and appearance.

NOC Number(s): 6483
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **M O D**

Duties

Duties vary from one position to another but, in general, pet groomers:

- answer inquiries from the public
- schedule appointments and record owner information
- record each pet's name, sex, breed and disposition, and any information about health problems
- discuss grooming requirements and desired styles with pet owners
- bath, cut, comb, style and blow-dry pets' coats
- maintain their equipment
- clip claws
- clean pets' ears
- suppress anal glands.

Pet groomers sometimes use special shampoos to destroy insect pests. They may also advise customers regarding pet grooming.

Working Conditions

Pet groomers generally work indoors. Their work may involve:

- getting dirty or wet
- being exposed to unpleasant odours
- restraining animals as well as lifting and carrying animals and cages weighing up to 25 kilograms
- being exposed to insect pests such as fleas and ticks
- being bitten or scratched.

Some evening or weekend work may be required to cater to the needs of pet owners who cannot bring their pets in for grooming on weekdays. Self-employed pet groomers often work long hours.

Personal Characteristics

Pet groomers need the following characteristics:

- physically fit and in good health
- not allergic to or afraid of dogs or cats
- interested in animals, able to work with them and willing to clean up after them
- artistic with grooming styles
- able to maintain control but at the same time be gentle, quiet and patient with animals
- able to deal with pet owners tactfully and gain their trust.

They should enjoy having clear rules and guidelines for their work and caring for animals.

Educational Requirements

There are no minimum education requirements for pet groomers. Training is mainly on the job. Some salons provide more formalized training. Since an understanding of dog and cat behaviour is very important for pet groomers, many employers prefer to hire applicants who have previous animal care experience.

In Alberta, two private vocational schools offer formal dog grooming education programs.

- **AB Dog Grooming School** in Leduc offers a 15-week Professional Pet Styling program. Applicants must have a high school diploma or equivalent.
- **My Pets Beauty Salon** in Calgary offers a 16-week Professional Dog and Cat Grooming program. Applicants must have a high school diploma or equvivalent.

For information about mature student admission policies, please contact the schools.

Prospective pet groomers are strongly advised to discuss training options with practicing pet groomers before choosing a training program.

Employment and Advancement

(section revised JANUARY 2006)

Pet groomers work in grooming salons, veterinary clinics and kennels. Some are self-employed and work from their own homes.

One way to get started in this field is to obtain part-time or full-time work during busy times such as in the spring and summer or holidays when many employers require additional staff.

Advancement opportunities are limited. With experience and small business management skills, pet groomers may become managers or start their own businesses.

Pet groomers are part of the larger National Occupational Classification 6483: Pet Groomers and Animal Care Workers. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Repair, Maintenance, Personal and Other Services**
- **Professional and Technical Services**

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

About 2,100 Albertans are employed in the Pet Groomers and Animal Care Workers occupational group which is expected to grow 1.0 to 2.0 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 20 to 50 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since pet groomers form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for pet groomers.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Pet groomers' earnings vary considerably. Experienced groomers may work on commission so their incomes depend on their reputation for good work and their business and customer service skills.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Pet Groomers and Animal Care Workers group working part-time or full-time earned from **$10,100 to $36,700 a year.** The average salary was **$15,300 a year.**

Other Sources of Information

Post-secondary institution calendars or websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Related Occupational Profiles

Animal Care Attendant
Animal Health Technologist

Related High School Subjects

Agriculture; Language Arts; Mathematics; and Physical Education

Related Post-Secondary Fields of Study

Personal and Food Services

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Petroleum Engineer

Produced JUNE 2004

Petroleum engineers are involved in the exploration and development of oil and gas fields. They apply the principles of geology, physics, chemistry and the engineering sciences to the recovery, development and processing of petroleum.

NOC Number(s): 2145
Minimum Education: 4 years post-secondary education/training
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: **I O D**

Duties

Petroleum engineers work closely with teams of geoscience professionals (for example, geologists and geophysicists) and oil field operating personnel. In general, petroleum engineers:

- analyze drilling data to determine if wells contain significant quantities of hydrocarbons that can be recovered economically
- make decisions regarding appropriate well completion techniques
- assess costs and evaluate the economic viability of potential drilling locations
- monitor and analyze reservoir performance
- find ways to improve production and optimize drilling, completion and recovery methods
- design and implement appropriate production, processing and transportation options
- estimate the immediate and long-term production capabilities of oil and gas wells and their ultimate recoverable volumes of oil and gas
- design and implement health, safety and environmental controls on oil and gas operations.

Junior engineers sometimes work in remote field locations overseeing the collection and analysis of oil and gas well data or supervising the installation or operation of facilities. They may use computers to analyze data and samples at the site and co-ordinate drilling activities and safety procedures.

Working Conditions

In remote locations, petroleum engineers often work on site for a week to 10 days, then have a week off. Engineers working in oil fields and on offshore drilling rigs often work 12 hour shifts. Lifting up to 10 kiliograms may be required.

Experienced petroleum engineers usually work in an office environment. They may specialize in specific areas of petroleum engineering such as drilling, reservoir management, completions, production, operations, petrophysics, gas processing, secondary and tertiary recovery methods or pipelines.

Personal Characteristics

Petroleum engineers need the following characteristics:

- an aptitude for mathematics and science (especially chemistry and physics)
- the ability to think logically and solve problems
- good communication skills including written and oral presentation skills
- the ability to work independently or with a team of scientists
- high energy levels to deal with their demanding workloads and changing priorities.

They should enjoy being innovative, doing work that requires precision and supervising others.

Educational Requirements

The minimum education requirement for petroleum engineers is a **bachelor's degree in petroleum engineering or a related discipline** (for example, a degree in mechanical engineering with a minor in petroleum engineering). After graduation, petroleum engineers must be prepared to continue their education on an ongoing basis to keep up with new developments.

In Alberta, the **University of Alberta** in Edmonton and the **University of Calgary** offer four year programs leading to Bachelor of Science (B.Sc.) degrees in engineering. The admission requirement is a high school diploma with an overall average of at least 70 per cent in English 30, Pure Math 30, Math 31, Chemistry 30 and Physics 30.

In addition to four year programs in engineering, the University of Alberta offers a co-operative program and the University of Calgary offers an internship program that include work experience components. Students in co-operative and internship programs usually take five years to complete degree requirements.

For those who already hold approved degrees or are registered as professional engineers, the University of Calgary offers a one year graduate diploma program in Chemical and Petroleum Engineering.

Post-secondary institutions throughout the province offer university transfer programs that allow students to apply up to two years of study to university bachelor's degree programs. It is the student's responsibility to ensure that the courses they choose to take will be accepted for credit at the institution to which they wish to transfer.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Other Requirements

(section revised OCTOBER 2004)

Under Alberta's Engineering, Geological and Geophysical Professions Act, you must be a registered member of the Association of Professional Engineers, Geologists and Geophysicists of Alberta (APEGGA) to practice as a Professional Engineer. You do **not** have to be registered if you work under the direct supervision of a Professional Engineer and do not call yourself a Professional Engineer.

Employment and Advancement

(section revised JANUARY 2006)

Most petroleum engineers work on site in locations where oil and gas are found. In Canada, the majority of petroleum engineers work in Alberta but there are also employment opportunities in British Columbia, Saskatchewan, Manitoba, Newfoundland and Nova Scotia. In recent years, many petroleum engineers have found employment overseas in oil producing countries around the world.

Employment opportunities are available locally with:

- major oil companies
- smaller, independent oil exploration, production and service companies
- engineering consulting firms
- government agencies.

Many petroleum engineers have their own consulting businesses or work in banks and other financial institutions which lend money to companies for the purchase of oil and gas properties.

Newly graduated petroleum engineers often start out doing field work under the supervision of an experienced engineer. There they can gain the kind of practical training that is required for more responsible field engineering or reservoir engineering assignments.

In the operations division, petroleum engineers can work their way up from field to district, division and operations management positions.

In Alberta, most people employed as petroleum engineers work in the following industries:

- **Oil and Gas Extraction**
- **Professional and Technical Services**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- fluctuations in supply and demand for oil and the price of oil
- other trends and **events** affecting employment (especially in the industries listed above)
- **location** in Alberta

- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 5,850 Albertans are employed in the Petroleum Engineers occupational group which is expected to grow 2.3 to 3.3 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 130 to 200 **new** positions will be created each year **in addition** to job openings created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised SEPTEMBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Petroleum Engineers occupational group working part-time or full-time earned from **$31,200 to $215,400 a year.** The average salary was **$97,400 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Association of Professional Engineers, Geologists and Geophysicists of Alberta (APEGGA) website: www.apegga.org

Petroleum Society, Canadian Institute of Mining, Metallurgy and Petroleum (CIMMP) website: www.petsoc.org

Society of Petroleum Engineers (SPE) website: www.spe.org

Related Occupational Profiles

Chemical Engineer
Geologist
Materials/Metallurgical Engineer
Mining Engineer
Petroleum Engineering Technologist

Related High School Subjects

Design Studies; Energy and Mines; Information Processing; Language Arts; Mathematics; Physical Education; Science (Chemistry; and Physics); and Wildlife

Related Post-Secondary Fields of Study

Engineering, Architecture and Related Studies

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Petroleum Engineering Technologist

Produced OCTOBER 2004

Petroleum engineering technologists are responsible for many of the technical activities involved in the production of oil and gas from conventional reserves, as well as from heavy oil and oil sands. Their knowledge and training is applied to petroleum drilling, geology, production procedures, formation evaluation and reservoir engineering.

NOC Number(s): 2212.1
Minimum Education: 2 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **O I d**

Duties

In general, petroleum engineering technologists are involved in:

- geology - constructing subsurface maps and cross-sections from well log data, and supervising geological aspects of wellsite operations
- well operations - preparing drilling and workover programs, measuring well log information and obtaining core data, supervising field servicing operations
- reservoir studies - calculating hydrocarbon reserves, analyzing waterflood performance and other secondary recovery operations, and evaluating economic viability
- production operations - designing equipment requirements for producing wells and batteries (field stations), planning and conducting fracturing and other stimulation operations, and supervising field production operations
- regulatory compliance - monitoring compliance with legislated and regulatory requirements
- occupational health and safety or environmental programs - implementing and monitoring safety and environmental programs

Technologists may perform a variety of tasks including:

- directing the work required in assembling the mechanical and electrical testing instruments used at the wellsite
- measuring and recording pressures, temperatures and flow rates at production facilities
- designing and supervising mud systems or well completions
- specifying surface equipment (separators, treaters and storage vessels for gas gathering facilities) or supervising their installation
- specifying artificial lift systems for different well conditions
- calculating well deliverability, hydrocarbon reserves (through volumetric, material balance and decline curve analysis) and the economic viability of various projects and procedures
- performing reservoir surveillance
- preparing and implementing drilling/workover programs
- evaluating land sales or lease expiries
- evaluating electric and porosity logs for potential hydrocarbon zones
- determining zones on a well for testing and coring operations
- analyzing production well tests
- optimizing well, gathering system and production facility performance
- making recommendations regarding processing techniques and implementing or monitoring chemical and corrosion inhibition programs
- conducting environmental impact assessments and managing remediation
- supervising processing facilities
- specifying pipeline or flowline systems, or supervising their installation
- submitting progress reports and managing budgets.

Working Conditions

Petroleum engineering technologists work at the wellsite, in field offices and in head offices. At the wellsite, they work shifts and may work outdoors in all weather conditions. In offices, they use computers for data compilation and analysis, project management and communications.

Personal Characteristics

Petroleum engineering technologists need:

- an aptitude for math, chemistry and physics
- good verbal and written communications skills
- good organizational skills
- an interest in and aptitude for working with computers
- the ability to work alone and with a team.

They should enjoy working with tools and instruments at tasks that require precision, analyzing data and finding innovative solutions to problems and taking charge of situations.

Educational Requirements

(section revised MAY 2005)

The minimum educational qualification required to work as a petroleum engineering technologist is a **two year diploma of technology related to petroleum engineering.**

- The **Northern Alberta Institute of Technology (NAIT)** in Edmonton offers a two year Petroleum Engineering Technology diploma program. The admission requirement is a high school diploma with English 30 or 33, Pure Math 30 (or Math 30 or at least 60 per cent in Math 33) and one of: Science 30, Physics 30 or Chemistry 30.
- The **Southern Alberta Institute of Technology (SAIT)** in Calgary offers a two year Petroleum Engineering Technology diploma program. The admission requirement is a high school diploma or equivalent with English 30, Pure Math 30 (or Math 30), Chemistry 30, and Science 30 or Physics 20.

SAIT also offers a Bachelor of Applied Technology Petroleum Engineering degree program that includes a 32 week work experience component. This program may be taken full-time or evenings. The entrance requirement is a two year engineering technology diploma (chemical, petroleum, electrical, mechanical, civil, power or industrial instrumentation) with a grade point average (GPA) of at least 2.5/4 or a degree in science or engineering from a recognized university.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Other Requirements

Certification with the Alberta Society of Engineering Technologists (ASET) is voluntary.

Under Alberta's Engineering, Geological and Geophysical Professions Act, Registered Professional Technologists - Engineering must be ASET members to engage in a defined scope of engineering practice as registered by the Association of Professional Engineers, Geologists and Geophysicists of Alberta (APEGGA).

Employment and Advancement

(section revised JANUARY 2006)

Petroleum engineering technologists may work in a variety of jobs related to oil and gas production and reservoir analysis. They are employed by:

- exploration, geological and geophysical companies
- oil, gas and resource companies
- engineering consulting firms
- petroleum service companies
- government departments and regulatory bodies.

Most major employers are located in western Canada but jobs are available worldwide.

Opportunities for advancement include team leadership, supervisory and management positions.

Petroleum engineering technologists are part of the larger National Occupational Classification 2212: Geological and Mineral Technologists and Technicians. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Oil and Gas Extraction**
- **Professional and Technical Services**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

About 3,600 Albertans are employed in the Geological and Mineral Technologists and Technicians occupational group which is expected to grow 1.6 to 2.6 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 50 to 100 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since petroleum engineering technologists form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for petroleum engineering technologists.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised SEPTEMBER 2005)

Salaries for petroleum engineering technologists vary considerably.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Geological and Mineral Technologists and Technicians occupational group working part-time or full-time earned from **$21,300 to $117,000 a year.** The average salary was **$56,700 a year.**

For more detailed information, see ASET's Annual Salary Surveys.

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Society of Engineering Technologists (ASET) website: www.aset.ab.ca

Related Occupational Profiles

Chemical Engineering Technologist
Geological and Geophysical Technologist
Hydrometric Technician/Technologist
Petroleum Engineer
Seismic Observer

Related High School Subjects

Design Studies; Electro-Technologies; Energy and Mines; Information Processing; Language Arts; Mathematics; Science (Chemistry; and Physics); and Wildlife

Related Post-Secondary Fields of Study

Engineering and Science Technologies

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Pharmacist

Produced MARCH 2005

Pharmacists provide services and programs that are designed to promote health and well-being, and treat disease and other disorders through drug therapy, wellness promotion and disease state management.

NOC Number(s): 3131.1
Minimum Education: 5 years post-secondary education/training
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: **M I D**

Duties

Pharmacists may work in:

- community pharmacies
- hospitals and related health institutions
- health research
- industrial settings
- post-secondary institutions
- health regulatory, advocacy and other professional organizations
- pharmacy administration.

In general, pharmacists working in community and hospital settings:

- determine, monitor and manage drug therapy, both independently and in collaboration with other health care professionals
- promote and maintain health and wellness, and provide disease state management
- counsel patients regarding the safe and appropriate use of drugs, and the importance of complying with drug therapy instructions
- assist patients, caregivers and other health care providers by providing advice regarding the selection and use of drug and non-drug products
- compound, prepare and dispense drugs
- provide non-prescription drugs, drugs for injection (including parenteral products), health care aides and devices
- supervise and manage drug distribution systems to maintain public safety and drug system security
- conduct or collaborate in drug-related research
- conduct or administer drug and other health-related programs such as structured medication reviews
- provide advice regarding disease management through home visits, medication and disease information, natural medicine consultations, disease prevention, management clinics and consultation (regarding asthma, diabetes, screening for osteoporosis, smoking cessation, heart health, depression, pain management, etc.), weight loss and nutrition consultation, anticoagulant management clinics, travel medicine clinics
- educate clients, patients, caregivers and other health professionals about related matters.

In addition, pharmacists in community settings:

- sell prescription and non-prescription drugs, surgical supplies, home health care aides, herbal products, vitamins and nutraceuticals, and other related products
- participate in health promotion, prevention and public health activities
- may also be involved in drug distribution logistics, accounting, marketing and human resource functions.

Pharmacists in hospital settings may specialize in fields such as oncology, cardiology, psychiatry, infectious disease, critical care, pediatrics and geriatrics.

Pharmacists in industrial and educational settings may:

- conduct pharmacy practice research and develop drug products
- work in the production, marketing, quality control or sales departments of pharmaceutical firms
- teach at the post-secondary level

- publish information to educate other pharmacists, physicians and patients
- be involved in advocacy, association management and government relations.

Working Conditions

Pharmacists may work alone, or with other pharmacists, physicians, nurses, pharmacy technicians or pharmacy assistants. Those working in community and hospital settings often work rotating shifts that include evenings and holidays.

In some settings, pharmacists may be required to stand for significant periods of time.

Personal Characteristics

Pharmacists need the following characteristics:

- a genuine interest in providing clinical care for people from all walks of life
- good communication skills
- tact and good judgement
- precise work habits and the ability to work under pressure
- a high degree of integrity
- the desire to keep up to date with new ideas and advances in the pharmaceutical sciences
- the ability to work independently, make decisions and solve problems.

They should enjoy tasks requiring precision and organized methods, synthesizing information and solving problems, and directing and instructing pharmacy staff.

Educational Requirements

The academic requirement is **a degree in pharmacy**.

In Alberta, the **University of Alberta** in Edmonton offers a four year Bachelor of Science (B.Sc.) degree in pharmacy. The entrance requirements are:

- a letter stating the applicant's reasons for wanting to enter pharmacy
- a preprofessional year of study that includes at least six units of course weight in general chemistry, organic chemistry and English, and three units in biology, biochemistry, statistics and calculus.

The required preprofessional year is not included in the four year B.Sc degree program in pharmacy so a total of five years of university education is required.

Admissions to the pharmacy program are limited and priority is given to students who have a high academic standing. Prospective students should carefully review **University of Alberta** course requirements for admission to the pharmacy program.

University transfer programs are offered by post-secondary institutions throughout Alberta. Admission requirements vary but generally include a high school diploma with a minimum average (ranging from 60 to 70 per cent depending on the program) in English Language Arts 30-1 (or English 30) and four other 30-level subjects (Pure Math 30 or equivalent, Chemistry 30 and Biology 30 may be required to gain admission to the preprofessional year courses listed above). Students are strongly advised to check the **Alberta Transfer Guide** to ensure that the courses they choose to take will be accepted by the University of Alberta.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Other Requirements

(section revised SEPTEMBER 2005)

Under Alberta's Pharmaceutical Profession Act, only registered members of the Alberta College of Pharmacists (ACP) may call themselves or practice as Pharmacists. The preparation, distribution and control of drugs in a pharmacy, the compounding, dispensing and retail sale of drugs, and the provision of information concerning the use of a drug when it is dispensed or sold, must be performed or supervised by a pharmacist.

Employment and Advancement

(section revised JANUARY 2006)

Pharmacists are employed by:

- pharmacies and retail stores with pharmacy departments
- health care facilities
- pharmaceutical companies
- government (regulatory departments, public heath units, food and drug inspection services, law enforcement laboratories, the Armed Forces)
- professional, advocacy and regulatory bodies
- college and universities (in teaching and research positions).

Pharmacists in community settings usually start as salaried employees but, with experience, may eventually become managers, partners or owners of pharmacies.

In Alberta, over 75 per cent of people employed as pharmacists work in the **Retail Trade** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Retail Trade industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 2,500 Albertans are employed in the Pharmacists occupational group which is expected to grow 2.2 to 3.2 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 50 to 80 **new** positions will be created each year **in addition** to job openings created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

There is a growing shortage of pharmacists in Alberta and across North America as a whole.

Salary

(section revised OCTOBER 2005)

According to the **2004** Pharmacists Association of Alberta Wage and Benefit Survey, pharmacists worked an average of 35 to 40 hours a week and their average wage ranged from $38 to $39 dollars an hour **($69,100 to $81,100 a year)**.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Pharmacists occupational group working part-time or full-time earned from **$33,900 to $96,300 a year.** The average salary was **$69,300 a year.**

For information about current collective agreements in the public and not-for-profit sectors, see the Health Sciences Association of Alberta (HSAA) website.

Other Sources of Information

(section revised SEPTEMBER 2005)

Post-secondary institution calendars or websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta College of Pharmacists website: www.pharmacists.ab.ca/college

Alberta Pharmacists' Association website: www.albertapharmacy.ca

Health Sciences Association of Alberta (HSAA) website: www.hsaa.ca

Related Occupational Profiles

Canadian Forces Personnel - Commissioned Officer
Pharmacologist

Related High School Subjects

Community Health; Language Arts; Mathematics; Physical Education; and Science (Biology; and Chemistry)

Related Post-Secondary Fields of Study

Health Care and Medical Sciences

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Pharmacologist

Produced FEBRUARY 2005

Pharmacologists are biomedical scientists who investigate the mechanisms underlying the effects of drugs and chemicals on living systems. They use this knowledge to help design and evaluate drugs for the prevention and treatment of disease.

NOC Number(s): 2121.2
Minimum Education: 4 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **I O D**

Duties

Duties and responsibilities vary from one position to another but, in general, pharmacologists:

- conduct basic, clinical or translational research in laboratories in universities, hospitals or the pharmaceutical and biotechnology industries
- participate in training physicians, pharmacists, dentists and other health care professionals in universities or other post-secondary institutions
- assist in the evaluation and marketing of drugs and related products for the pharmaceutical industry
- work in government agencies concerned with the detection, regulation and licensing of drugs and related products.

Their work is multi-disciplinary, combining principles from biomedical and other sciences including physiology, biochemistry, molecular and cell biology, pathology, microbiology, chemistry, nutrition and psychiatry. They develop drugs for the treatment of a wide variety of conditions (e.g. bacterial infections or psychiatric, neurological or cardiovascular diseases).

Pharmacologists may specialize in one or more of the following areas:

- **pharmacodynamics** - the study of the mechanisms of drug action. This may involve conducting experiments to investigate drug actions on biological processes (e.g. gene regulation, structure and function of proteins, cell biology, tissue and organ responses to physiological and pathological stimuli) in intact organisms (including humans).
- **pharmacokinetics and drug metabolism** - the study of the time-dependent processes of absorption, distribution, biotransformation and elimination of drugs in animals and humans so appropriate dosage regimens for drugs can be developed to maximize therpuetic benefit and minimize unwanted effects.
- **toxicology** - the study of poisons, including their mechanisms of action, as well as the detection and treatment of the adverse effects of drugs (for related information, see the Toxicologist occupational profile).

Basic pharmacologists generally study drug and chemical responses in biological systems using experimental animals.

Clinical pharmacologists are usually physicians (for more information, see the Physician occupational profile) who specialize in the study of pharmacodynamic and pharmacokinetic properties of drugs in humans.

Translational pharmacologists are those who facilitate the clinical application of new discoveries in basic pharmacological research.

Working Conditions

Pharmacologists usually work in research laboratories. Overtime is often required to complete projects on time.

Pharmacologists may be required to travel to scientific workshops and conferences to share their research findings with other scientists or health care professionals.

Personal Characteristics

Pharmacologists need the following characteristics:

- a sound background and aptitude for biological and medical sciences
- an inquiring mind combined with excellent critical thinking abilities
- good communication skills
- perseverance and patience.

They should enjoy synthesizing information to solve problems and develop innovative solutions. This may involve working in teams with other basic and clinical scientists, applying a range of analytical techniques and using sophisticated instrumentation.

Educational Requirements

(section revised APRIL 2005)

A **four year Bachelor of Science (B.Sc.) degree** in pharmacology or a related biomedical science (e.g. biochemistry, physiology) is required to work in a technical job or to become a representative for a pharmaceutical company (for more information, see the Technical Sales Representative profile). Pharmacologists who have Master of Science (M.Sc.) degrees may work as technologists or research associates. A Doctoral (PhD) degree is generally required to work as an independent investigator in universities or industry. After obtaining a Doctoral degree, pharmacologists generally continue training for up to six or more years as post-doctoral fellows before accepting academic research and teaching positions in universities.

Because pharmacology involves the use of principles from many of the biomedical sciences, there is more than one possible education route. Pharmacologists may train initially in medicine, pharmacy, molecular biology, biochemistry or physiology before specializing in pharmacology.

The **University of Alberta** in Edmonton offers a B.Sc. degree program as well as post graduate programs leading to the M.Sc. and PhD degrees in Pharmacology. The entrance requirement for the Bachelor's degree program is an average of at least 70 per cent in English 30, Math 30 or Pure Math 30, Biology 30, Chemistry 30 and Physics 30. Higher marks are generally required to gain admission to this quota program.

The **University of Calgary** offers a four year Bachelor of Health Sciences Honours degree program in Biomedical Sciences. The entrance requirements include English 30, Pure Math 30 (with a minimum grade of 70 per cent), Biology 30, Chemistry 30 and one of the following: Math 31, Physics 30, Social Studies 30, Science 30, a language 30 other than English or one 5-credit Grade 12 subject. Enrollment is limited.

Post-secondary institutions throughout Alberta offer university transfer programs that allow students to apply up to two years of study toward university Bachelor's degree programs. It is the student's responsibility to ensure that the courses they choose to take will be accepted for credit at the institution to which they wish to transfer.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

(section revised JANUARY 2006)

Pharmacologists are employed by:

- provi ..al and federal governments
- universities
- research institutes
- pharmaceutical and biotechnology companies
- health authorities
- food processing companies
- agricultural chemical companies.

Pharmacologists work closely with other science and health professionals to ensure that new products are as safe and effective as possible. Often pharmacologists work in an advisory role in activities related to the development, formulation, production and marketing of new drugs for clinical use.

Pharmacologists are part of the larger National Occupational Classification 2121: Biologists and Related Scientists. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Professional and Technical Services**
- **Public Administration**

- **Health Care and Social Assistance**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

About 1,100 Albertans are employed in the Biologists and Related Scientists occupational group which is expected to grow 1.3 to 2.3 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 10 to 30 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since pharmacologists form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for pharmacologists.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Suitably qualified integrative pharmacologists at the M.Sc. level are in high demand in the pharmaceutical industry.

Salary

(section revised SEPTEMBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Biologists and Related Scientists occupational group working part-time or full-time earned from **$17,000 to $99,400 a year.** The average salary was **$64,600 a year.**

Pharmacologists who have M.Sc. degrees earn from **$35,000 to $45,000 per year.** Those who have PhDs earn from **$40,000 to $60,000 per year** as post-doctoral fellows. Experienced research pharmacologists earn over **$100,000 per year (2005 estimates).**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Pharmacological Society of Canada (PSC) website: www.pharmtox.med.uwo.ca/psc

Related Occupational Profiles

Agrologist
Biologist
Biotechnologist
Chemist
Ecologist
Food Scientist
Forensic Laboratory Analyst
Geneticist
Microbiologist
Pharmacist
Physician
Physiologist
Toxicologist

Related High School Subjects

Community Health; Language Arts; Mathematics; and Science (Biology; Chemistry; and Physics)

Related Post-Secondary Fields of Study

Health Care and Medical Sciences; and Sciences

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Pharmacy Assistant/Technician

Produced JANUARY 2005

Pharmacy assistants and technicians assist pharmacists by compounding, packaging and labelling pharmaceutical products, and maintaining prescription records and inventories of medications and pharmaceutical products.

NOC Number(s): 3414.4
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **M I O**

Duties

Pharmacy assistants and technicians work under the supervision of one or more pharmacists. Their duties and responsibilities vary, depending on their level of training and where they work (in a hospital or a retail pharmacy). In general, they:

- maintain proper storage and security conditions for drugs
- enter patient information and doctors' prescriptions in computer systems
- maintain prescription and inventory record keeping systems
- maintain inventories
- place orders for stock.

Additional responsibilities depend on the setting. For example, in retail outlets, pharmacy assistants and technicians may:

- answer telephones
- help customers find non-prescription items
- answer customer questions about non-drug products
- accept payments for prescriptions
- price stock and mark items for sale
- prepare and reconcile third party insurance claims and records.

In hospital settings, they may:

- restock drugs and solutions kept on nursing wards
- restock drug kits that are kept for specific types of emergencies (e.g. anapylactic shock, diabetic shock)
- fill dose carts and deliver them to nursing stations
- collect and chart information.

Technicians generally have more training than assistants and therefore have additional responsibilities such as:

- preparing, packaging and labelling prescription medications
- preparing sterile products such as intravenous (IV) admixtures, chemotherapy admixtures and total parenteral nutrition (TPN)
- preparing specialized compounds
- checking dispensed, compounded and sterile products
- supervising other staff.

Working Conditions

Pharmacy assistants and technicians may be required to work shifts including evenings, weekends and holidays, sometimes under stressful conditions. The work is demanding and requires accuracy; there is no room for error.

Pharmacy assistants and technicians are on their feet for most of their shift and may be required to lift and move objects weighing up to 10 kilograms.

Personal Characteristics

Pharmacy assistants and technicians must be able to perform routine tasks while maintaining a high degree of concentration and attention. They also need the following characteristics:

- excellent oral and written communication skills
- a caring attitude towards others
- good manual dexterity
- the ability to remain calm and handle emergencies
- the ability to pay close attention to detail
- a willingness to keep up to date with new products and changes in old products.

They should enjoy having clear rules and organized methods, compiling information and using computers.

Educational Requirements

(section revised DECEMBER 2005)

Employers usually prefer to hire applicants who are graduates of a related training program or who have pharmacy experience. Computer literacy and keyboarding skills are essential.

- **Academy of Learning** in Calgary, Edmonton, High River and Red Deer offers a 43 week Retail Pharmacy Technician program. The entrance requirement is a high school diploma with Grade 12 English and a Grade 10 math, or equivalent. The Academy of Learning in Edmonton also offers a 51-week Pharmacy Technician program. The entrance requirement is a high school diploma or equivalent.
- **Bow Valley College** in Calgary offers a two year Pharmacy Technician diploma program. The entrance requirement is a high school diploma with an average or 60 per cent with no grade lower than 60 per cent in English 30-1 or 30-2 (English 30 or 33), Applied Math 30 or Pure Math 30 (Math 30 or 33), Biology 30 and Chemistry 30 or equivalent.
- **CDI College of Business, Technology and Health Care** in Edmonton offers a 46-week Pharmacy Technician certificate program. The entrance requirement is a high school diploma or equivalent.
- **CDI College of Business, Technology and Health Care** in Calgary and Edmonton offers a 34-week Pharmacy Technician-Retail certificate program. The entrance requirement is a high school diploma or equivalent.
- **Grande Prairie Regional College** offers a 20-week Pharmacy Assistant Retail certificate program. The entrance requirement is a high school diploma with a combined average of at least 60 per cent in Grade 12 Math and English, and Computers or Information Processing 20 or equivalent.
- **Lakeland College** in Sherwood Park offers an 18-week Pharmacy Technician Certificate of Training. The entrance requirement is a high school diploma with a combined average of at least 60 per cent in English Language Arts 30-1, English Language Arts 30-2, English 30 or 33 and Pure Math 20, Applied Math 20, Math 20 or 23.
- **NorQuest College** in Edmonton offers a two year Pharmacy Technician diploma program. The entrance requirement is a high school diploma with an overall average of at least 60 per cent and no grade below 60 per cent in the following courses: English 30-1 or 30-2 or equivalent, Pure or Applied Math 30 or equivalent, and Biology 30. Applicants should have a keyboarding speed of at least 20 words per minute and up-to-date immunizations.
- **Red Deer College** offers a 14 course Pharmacy Technician certificate program that includes a practicum (one month in a community pharmacy and one in a hospital pharmacy). The program may be taken full time (10 months), part-time (two years) or by distance education (two years plus practicum). The entrance requirement is a high school diploma or equivalent with English 30 or 33; Biology 30, Science 30 or Chemistry 30; Math 30 or 33 (or Pure or Applied Math 30) and evidence of computer literacy (Info Processing 1010, 1020, 2050, 2080) or successful completion of a test. Applicants also must be in good health and bondable.
- **Reeves College** in Edmonton offers a 30-week Retail Pharmacy Technician certificate program. The entrance requirement is a high school diploma with a Grade 12 English and a Grade 12 Math or equivalent.
- **Robertson College** in Calgary offers a 40 week Pharmacy Technician program. The entrance requirement is a high school diploma with Grade 12 English or equivalent.
- **Southern Alberta Institute of Technology (SAIT)** in Calgary offers a five month (includes practicum) Pharmacy Technician (Retail) certificate program. The entrance requirement is a high school diploma or equivalent with an overall average of at least 60 per cent in Pure or Applied Math 30 or Math 33, English 30 or 33, and Computers or Information Processing 20 or equivalent.
- **Sprott-Shaw Community College** in Calgary and Edmonton offers a 33 week Retail Pharmacy Technician program. The entrance requirement is a high school diploma or equivalent.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

(section revised JANUARY 2006)

Most pharmacy assistants and technicians are employed in:

- retail pharmacies
- hospital and medical centre pharmacies.

Pharmacy technicians also may be employed by:

- health insurance companies and third party billing centres (e.g. Alberta Blue Cross)
- related organizations such as pharmaceutical companies, drug wholesalers and pharmacy supply companies.

Depending on the size and nature of the organization, experienced pharmacy technicians may advance to supervisory positions. In some organizations, pharmacy assistants may advance to pharmacy technician positions through in-house training.

Pharmacy assistants and technicians are part of the larger National Occupational Classification 3414: Other Assisting Occupations in Support of Health Services. In Alberta, most people employed in this classification work in the following industries:

- **Retail Trade**
- **Health Care and Social Assistance.**

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 7,100 Albertans are employed in the Other Assisting Occupations in Support of Health Services occupational group which is expected to grow 2.0 to 3.0 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 140 to 220 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since pharmacy assistants and technicians form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for pharmacy assistants and technicians.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Other Assisting Occupations in Support of Health Services occupational group working part-time or full-time earned from **$11,900 to $58,200 a year.** The average salary was **$23,700 a year.**

For information about current collective agreements in the public and not-for-profit sectors, see the Health Sciences Association of Alberta (HSAA) website.

Other Sources of Information

EDinfo website: www.alis.gov.ab.ca/edinfo

Canadian Association of Pharmacy Technicians (CAPT), Alberta website: www.captalberta.org

Health Sciences Association of Alberta (HSAA) website: www.hsaa.ca

Pharmacy Technician Certification Board of Alberta (PTCB Ab) website: www.ptcbalberta.com

Related Occupational Profiles

Ophthalmic Assistant
Sterile Processing Technician

Related High School Subjects

Community Health; Information Processing; Language Arts; Mathematics; Physical Education; and Science (Biology; and Chemistry)

Related Post-Secondary Fields of Study

Health Care and Medical Sciences

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Photographer

Produced JUNE 2005

Photographers use their skills and artistic talent to capture people, products, events, fashion, landscapes, legal evidence and other subjects on film or digital media.

NOC Number(s): 5221
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **I M O**

Duties

Photographers may specialize in fields such as commercial, fashion, portrait, event, forensic, aerial, scientific or multimedia photography, or photojournalism. In general, however, they:

- consult with clients or advertising staff and study assignments to determine locations and type of equipment needed
- select appropriate media (film or digital), equipment (e.g. lenses, electronic flashes, floodlights, reflectors) and props
- set up equipment and adjust cameras for desired focus, exposure, composition and other settings
- take numerous photographs and choose from the best
- test and maintain all equipment
- use specialized printers, film and paper processing or digital media as appropriate
- use computers with appropriate software to process and manipulate digital images
- may use various techniques to re-touch negatives and prints.

Commercial photographers (advertising, architectural, corporate, fashion, industrial and product photographers) take pictures for advertising, public relations, manual illustration, brochures, sales catalogues, flyers or other commercial purposes. The subjects they photograph include merchandise, industrial products, clothing, food, equipment, buildings and people. They may specialize in large products, small tabletop work or fashion photography. They must be very versatile, able to shoot almost anything and produce dramatic, quality work quickly. They often work closely with art directors and use computers to digitally manipulate images.

Portrait and wedding photographers take pictures of individuals, groups of people and pets, often at significant moments in subjects' lives. In small photography studios or department stores, photographers may have a variety of responsibilities in addition to taking pictures including:

- arranging appointments and viewings
- selling photograhic equipment and supplies, images and related products such as picture frames and albums
- bookkeeping and general office duties
- framing and laminating photographs
- processing, enhancing and retouching film and digital images.

The ability to help people relax in front of the camera is an essential skill for portrait and wedding photographers.

Event photographers attend events such as sports tournaments and large family reunions, take digital photographs and sell images to people attending the event. They may sell print copies of images or CDs of images.

Forensic photographers use computers, cameras and related equipment to:

- record legal evidence at the scene of a crime, in hospitals or in a forensic laboratory
- develop visual aids and charts for lectures and the presentation of evidence
- provide a permanent record of evidence for use in court
- provide support for the rest of the scientific activities in a forensic lab.

Forensic photographers may employ a variety of specialized materials and techniques including infrared and ultraviolet films, macro-photography, photomicrography, photogrammetry and sensitometry.

Forensic photoanalysts are scientists who use photographic or photoanalytical techniques to examine physical marks and relate materials to each other (e.g. microscopic random marks on an object may reveal that two items originate from a common source). For more information, see the Forensic Laboratory Analyst occupational profile.

Aerial photographers shoot pictures from aircraft for news, scientific research, town planning, rural development, cartographic, economic or military purposes. They may photograph:

- subdivisions of homes for realtors
- industrial sites for corporate brochures
- altitude and area mapping for surveys
- horse and cattle operations for advertising purposes.

They use various types of equipment to produce black and white, colour, infra-red and three-dimensional images.

Scientific and biomedical photographers specialize in scientific fields such as medicine. For example, they may:

- provide illustration and documentation for scientific publications and research reports
- specialize in patient, operating room or laboratory photography
- produce images of treatment procedures for medical textbooks.

Medical photographers must have a good understanding of human anatomy. They may work closely with medical illustrators and graphic design specialists to prepare presentations for medical lectures or textbooks.

This is a highly technical field, using specialized techniques such as ultraviolet and infrared photography, fluorescence, x-rays, time-lapse photography, photomicrography and photogrammetry to obtain information. Photographers in this field often use very delicate instruments such as optical microscopes attached to a camera. Some medical photographers are highly trained specialists (e.g. retinal photographers).

Multimedia photographers produce and manipulate silver-based and digital images to:

- illustrate web-pages or sites and support e-commerce
- enhance multimedia presentations
- store, retrieve and transfer electronic image files.

They may use a wide variety of devices including digital cameras, film recorders, dye-sublimation printers and flatbed, film and drum scanners.

Photojournalists (press photographers) take pictures for newspapers and magazines to tell news stories about events, people, places and objects. They must be able to recognize a scene or event as important or unusual, make decisions instantly and carry a camera, sometimes in dangerous circumstances. Since they usually use digital photography and transmit pictures electronically, they must stay abreast of changing technology.

Writing may be part of a photojournalist's assignment. Magazines and newspapers sometimes buy a "picture story" which includes both pictures and a written narrative.

Working Conditions

Photographers may be routinely required to lift equipment weighing up to 10 kilograms. Photojournalists may carry lenses, a laptop computer and extra camera equipment that weigh up to 20 kilograms. The pressure of having to meet deadlines can be stressful.

Other working conditions, especially working environments and hours, vary considerably in this occupation. For example, commercial photographers and portrait photographers may work in well-lighted studios, scenic outdoor locations, clients' homes, churches or corporate offices. Those employed full-time may work regular hours, five days a week. Freelance photographers often are required to work evenings and weekends.

Photojournalists often work long, irregular hours and may be expected to be at a certain location at a moment's notice. The scenes to be photographed are sometimes very unpleasant. Some photojournalists travel to various news "hot spots" around the world. Living conditions may be less than ideal.

Personal Characteristics

Photographers need the following characteristics:

- good listening skills
- good eyesight and colour vision
- artistic ability
- manual dexterity
- a good sense of timing

- patience and the ability to put people at ease
- the ability to work accurately with details
- an interest in learning new procedures.

They should enjoy composing and arranging innovative pictures, and working with equipment.

Educational Requirements

Photographers may learn by working in related fields or by taking related post-secondary education programs. Computer skills are essential for digital photography and increasingly required in other forms of photography.

The field of professional photography is quite competitive. Versatility is an important and often critical element in obtaining work as a professional photographer.

Post-secondary institutions throughout Alberta offer fine art, visual arts, design, communications and journalism programs. The following institutions offer programs specifically related to the technical, artistic or design aspects of photography.

- The **Alberta College of Art and Design** in Calgary offers a four year Bachelor of Design degree program in photography. The program includes a foundation year in the Visual Arts program. The entrance requirement for the Visual Arts program is a high school diploma with an average of at least 60 per cent in four Grade 12 subjects including English 30 or English Language Arts 30-1 (or 65 per cent in English 33 or ELA 30-2).
- **Grant MacEwan College** in Edmonton offers a two year Design Studies diploma program with a major in design and photography. Applicants must have successfully completed the College's one year Design Foundation's Certificate program. The entrance requirement for the certificate program is a high school diploma with English 30 (or at least 75 per cent in English 33 or successful completion of an exam).
- The **Northern Alberta Institute of Technology (NAIT)** in Edmonton offers a two year diploma program in Photographic Technology. The minimum entrance requirement is a high school diploma with an average of at least 68 per cent in English 30 or 33, and Pure or Applied Math 30 (or Math 30 or 33). Media-related courses may be considered; high school courses related to art and design, physics, chemistry, communications, psychology and computers are recommended. Admission to this quota program is competitive.
- The **Southern Alberta Institute of Technology (SAIT)** in Calgary offers a two year Journalism diploma program with a photojournalism major. The minimum entrance requirement is a high school diploma with English Language Arts 30-2, ELA 30-2, English 30 or English 33. Students in the photojournalism major are generally selected from first year Journalism students.
- The **University of Alberta** in Edmonton offers four year Bachelor of Design degree program in visual communications. The entrance requirement is a high school diploma with an average of 65 to 80 per cent in English Language Arts 30-1 (or English 30) and any four of the following: Social Studies 30, a 30 level language other than English, Biology 30, Chemistry 30, Physics 30, Math 30 or Pure Math 30 or Math 31, Science 30, one approved fine arts subject.
- The **University of Calgary** offers a four year Bachelor of Fine Art (BFA) degree program with a specialization in photography. The entrance requirement is a high school diploma or equivalent with an average of at least 60 per cent in English 30 and four of the following: Social Studies 30, Pure Math 30, Applied Math 30, Math 31, Biology 30, Chemistry 30, Physics 30, Science 30, a 30 level language other than English, Art 30, one five credit Grade 12 subject. The Faculty of Continuing Education offers a 250 hour Visual Design certificate program with a photographic arts specialization.
- The **University of Lethbridge** offers four year and post-diploma BFA degree programs with a specialization in Photo-Arts. The entrance requirement is a high school diploma with an average of at least 65 per cent in English Language Arts 30-1 (or English 30), three other 30 level subjects and a fifth Grade 12 subject.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

(section revised JANUARY 2006)

Photography is a very competitive field. Most photographers work as independent freelancers who specialize in one or more types of work. Some full-time employment is available in areas such as forensic, medical, aerial or scientific photography but these are very specialized jobs and limited in number. Department stores and retail chains offer some full-time positions in portrait photography.

In Alberta, most people employed as photographers work in the following industries:

- **Professional and Technical Services**
- **Information, Culture and Recreation**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 1,450 Albertans are employed in the Photographers occupational group which is expected to grow 1.3 to 2.3 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 10 to 40 **new** positions will be created each year **in addition** to job openings created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Talent, perseverance, reputation and experience determine how much freelance photographers earn.

According to the **2005 Alberta Wage and Salary Survey**, Albertans working part-time or full-time in the Photographers occupational group earned **up to $58,700 per year.** The average salary was **$50,000 per year**.

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Professional Photographers Association (APPA) website: www.appa.ab.ca

Canadian Association for Photographic Arts (CAPA) website: www.capacanada.ca

Canadian Association of Photographers and Illustrators (CAPIC) website: www.capic.org

Professional Photographers of Canada (PPOC) website: www.ppoc.ca

Related Occupational Profiles

Cinematographer
Reporter
Television Camera Operator

Related High School Subjects

Communication Technology; Design Studies; Fine Arts (Visual Arts); Language Arts; Mathematics; Physical Education; Science (Chemistry; and Physics); Social Studies; and Tourism Studies

Related Post-Secondary Fields of Study

Communications; and Fine Arts and Performing Arts

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Photographic Processing Technician

Produced MAY 2005

Photographic processing technicians develop images and make prints and slides. They also may enlarge and retouch photographs or use computers to manipulate images.

NOC Number(s): 9474
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus below average occupational growth in Alberta
Interests: O M I

Duties

Some photographic processing technicians are semi-skilled workers who operate machinery that automatically develops and prints film; others are skilled technicians who perform detailed tasks that cannot be automated.

In general, photographic processing technicians:

- process film and make prints
- mix chemicals
- maintain quality control.

Experienced technicians may work in the laboratories of professional photographers or supervise equipment operators in laboratories that process large volumes of photographs. In addition to the duties listed above, they:

- enlarge negatives or slides
- eliminate minor imperfections
- create special effects
- retouch photographs
- use computers to manipulate images
- output digital images to specialized peripheral equipment
- maintain quality control
- maintain equipment.

Those who work in photography studios also may set up lights and cameras and generally assist photographers.

Working Conditions

Photographic processing technicians usually work in clean, air-conditioned surroundings. They often sit for long periods of time performing tasks as quickly as possible while still maintaining quality standards.

In laboratories that provide fast service for amateur photographers, shift work may be required.

Technicians who spend long periods of time closely examining small images or at computer workstations may be subject to eyestrain.

Personal Characteristics

Photographic processing technicians need the following characteristics:

- good vision including colour perception
- manual dexterity
- mechanical ability
- no allergies to chemicals used in photographic processing
- the ability to concentrate on details and work quickly.

They should enjoy operating equipment and having clear guidelines and organized methods for their work.

Educational Requirements

Individuals who have no formal training in photography or photofinishing may be hired and **trained on the job** in a large processing (photofinishing) laboratory. Initially, they perform routine duties such as cutting prints. Experienced workers (often graduates of related post-secondary programs) generally perform more complex tasks such as printing, hand enlarging, retouching and the computer manipulation of images.

Most employers prefer to hire high school graduates who are computer literate. Experience processing film as a hobby is an asset.

Employment and Advancement

(section revised JANUARY 2006)

Photographic processing technicians may be employed full-time or part-time in:

- photofinishing laboratories that process film for amateur or professional photographers
- photographic supply and developing shops
- portrait and commercial studio laboratories
- the photo laboratories of newspapers, magazines, advertising agencies, health facilities, research laboratories and police services
- establishments that use digital imaging.

Inexperienced photographic processing technicians may start work operating automated equipment in labs such as those in many retail outlets. Experienced technicians employed in large volume laboratories can advance to supervisory positions, particularly if they have related post-secondary education or become sales or customer service representatives. Some photographic processing technicians open their own laboratories and some become professional photographers.

Photographic processing technicians are part of the larger National Occupational Classification 9474: Photographic and Film Processors. In Alberta, most people employed in this classification work in the following industries:

- **Retail Trade**
- **Repair, Maintenance, Personal and Other Services**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 1,000 Albertans are employed in the Photographic and Film Processors occupational group which is expected to grow up to 0.7 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Earnings vary according to the photographic processing technician's qualifications and the place of employment. **Starting wages** range from **minimum wage to $10 per hour (2005 estimate)**.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Photographic and Film Processors occupational group working part-time or full-time earned from **$14,600 to $39,100 a year.** The average salary was **$25,200 a year.**

Other Sources of Information

Post-secondary institution calendar and website (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Photo Marketing Association International (PMAI) website: www.pmai.org

Related Occupational Profiles

Plastics Processing Technician

Related High School Subjects

Communication Technology; Fine Arts (Visual Arts); Language Arts; Mathematics; and Science (Chemistry)

Related Post-Secondary Fields of Study

Communications

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Physical Therapy Assistant

Produced DECEMBER 2004

Physical therapy assistants assist physiotherapists in the implementation of treatment programs designed to improve or maintain clients' abilities to function independently.

NOC Number(s): 3414.2
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **M S o**

Duties

Physical therapy assistants' duties vary from one position to another. For example, they may work in out-patient clinics with clients who have orthopedic problems, in extended care settings with geriatric clients, or in hospital settings with patients who have a variety of disorders. Whatever the setting, they work under the direction and supervision of physiotherapists.

Physical therapy assistants may:

- accompany patients to treatment rooms, perform lifts and transfers, and help patients correctly position themselves
- prepare and apply hot or cold packs and wax treatments
- assist or participate in hydrotherapy activities
- perform/assist with exercise activities such as stretching, individual exercises, posture re-education and gait re-education
- assist with implementing electrotherapy treatments such as ultrasound, interferential treatment, transcutaneous electrical nerve stimulation and electrical muscle stimulation
- apply braces or artificial limbs and instruct clients in the use of crutches, canes, walkers and wheelchairs
- lead or participate in group exercise or activity classes
- monitor patients during treatments, individual activities and exercise classes, and report patient performance
- perform postural drainage, percussions and vibrations for treatment of respiratory conditions and teach deep breathing exercises.

Physical therapy assistants also may be involved in other activities:

- adjusting and monitoring the operation of equipment
- preparing treatment areas and electrotherapy equipment for use by physiotherapists
- checking and storing equipment
- cleaning physical therapy equipment and treatment areas
- changing and laundering linen
- performing clerical tasks such as documenting activities, keeping track of statistics, maintaining an inventory of equipment, ordering supplies and equipment, answering telephones and scheduling appointments.

Working Conditions

Physical therapy assistants work in a variety of settings including private practices, hospitals, long term care facilities, schools and private homes. They generally work weekdays but may be required to work some evenings and weekends.

The work is physically demanding. Physical therapy assistants help patients to stand and walk and may be on their feet for long periods of time. They may be required to move equipment weighing up to 25 kilograms.

Personal Characteristics

Physical therapy assistants need the following characteristics:

- flexibility and adaptability
- good interpersonal skills
- good oral and written commuication skills
- patience
- manual dexterity
- strength and stamina
- good observation and organizational skills
- the ability to deal with people who are under physical and emotional stress
- the ability to follow directions closely and work as part of a team
- the ability to maintain patient confidence and enthusiasm.

They should enjoy having clear guidelines and organized methods for their work, helping people and using therapeutic equipment.

Educational Requirements

(section revised APRIL 2005)

In the past, physical therapy assistants were often trained on the job. Now, an increasing number are graduates of post-secondary Therapist Assistant programs. Some have a related background in practical nursing or exercise therapy.

In Alberta, the following institutions offer training programs for physical therapy assistants:

- **Grant MacEwan College** in Edmonton offers a two year Therapist Assistant diploma program that prepares graduates for work as an occupational therapist assistant or physical therapist assistant (or both). Applicants must have a high school diploma or equivalent with an average of at least 65 per cent in English 30, Biology 30, Chemistry 30 or Science 30, and two other Grade 12 subjects.
- **Medicine Hat College** offers a two year Physical Therapy Assistant diploma program via classroom instruction or distance education. Applicants must have a high school diploma or equivalent with at least 60 per cent in English 30, Biology 30, and two other 30 or 33 level subjects, one of which must be a 30-level science or math. Students must have obtained a current Basic CPR Certficate (BCLS), a Standard First Aide Certificate and updated immunizations.
- **NorQuest College** in Edmonton offers a two year Physical Therapy Assistant diploma program. The entrance requirement is a high school diploma with at least 70 per cent in English 33 or 30-2 or eqivalent, 50 per cent in Math 10 and 60 per cent in Biology 30, or a GED with a B average. Applicants also require CPR, an immunization record and a clear criminal record check.
- **Southern Alberta Institute of Technology (SAIT)** in Calgary offers a 14 month Rehabilitation Therapy Assistant certificate program via an alternate delivery model. Students take a core curriculum for the first two semesters (September - April) and then branch into one of two areas: occupational therapist assistant or physical therapist assistant. Applicants must have a high school diploma or equivalent with an overall average of at least 60 per cent in English 30, Biology 30 and Chemistry 20. Applicants also must be able to demonstrate a level 8 in the Canadian Language Benchmarks Assessment (available through SAIT). Basic CPR, a standard first aid certificate and updated immunization are required prior to the first practicum placement.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

(section revised JANUARY 2006)

Physical therapy assistants are employed in:

- hospitals
- rehabilitation centres
- nursing homes
- long term care
- community and government health agencies
- home care agencies
- physiotherapists' offices and clinics
- schools.

Without further education, advancement opportunities for physical therapy assistants are limited.

Physical therapy assistants are part of a larger National Occupational Classification 3414: Other Assisting Occupations in Support of Health Services. In Alberta, most people employed in this classification work in the following industries:

- **Retail Trade**
- **Health Care and Social Assistance.**

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 7,100 Albertans are employed in the Other Assisting Occupations in Support of Health Services occupational group which is expected to grow 2.0 to 3.0 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 140 to 220 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since physical therapy assistants form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for physical therapy assistants.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Other Assisting Occupations in Support of Health Services occupational group working part-time or full-time earned from **$11,900 to $58,200 a year.** The average salary was **$23,700 a year.**

Wages in private practice settings tend to be lower than those in public service settings such as hospitals. For information about current collective agreements in the public and not-for-profit sectors, see the Health Sciences Association of Alberta (HSAA) website.

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Physiotherapy Association (APA) website: www.albertaphysio.org

Health Sciences Association of Alberta (HSAA) website: www.hsaa.ca

Therapist Assistant Association of Alberta (TAAA) website: www.thaaa.ca

Related Occupational Profiles

Chiropractic Assistant
Dental Assistant
Occupational Therapist Assistant
Ophthalmic Assistant
Physiotherapist
Rehabilitation Practitioner
Speech-Language Pathologist Assistant

Related High School Subjects

Community Health; Language Arts; Mathematics; Physical Education; and Science (Biology; and Chemistry)

Related Post-Secondary Fields of Study

Health Care and Medical Sciences

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Physician

Produced NOVEMBER 2004

Physicians are licensed to diagnose and treat patients' diseases, physiological and psychiatric disorders, injuries and other health-related problems.

NOC Number(s): 3112
Minimum Education: 8 + years post-secondary education/training
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: **I S D**

Duties

In general, physicians:

- take medical histories and examine patients
- order, perform and interpret medical tests to diagnose health-related problems
- determine appropriate treatments which may include advice, medication or more complex treatment or rehabilitation programs
- counsel patients on diet, hygiene and preventative health care
- co-ordinate their work with nurses, social workers, rehabilitation therapists, pharmacists, psychologists and other health care providers.

Specific duties and responsibilities vary depending on the type of position:

- family physician or other medical specialist
- public health officer
- occupational health officer
- research scientist
- teacher or professor
- administrator.

Physicians may specialize in areas such as anaestheology, cardiology, emergency medicine, family medicine, geriatrics, gynecology and obstetrics, intensive care, internal medicine, neurology, pediatrics, psychiatry, sport medicine or surgery.

Working Conditions

Physicians' working conditions depend on the type of position. Those in private practice work in hospitals, clinics, offices and community settings. In a typical day, most physicians see a succession of patients and may spend a considerable amount of time driving to hospitals, clinics or patients' homes. The work can be both emotionally demanding and rewarding.

Physicians often work very long hours. They may work rotating shifts or be on call. They generally spend part of their time standing to examine or treat patients, and part of their time at a desk completing the required paperwork.

Personal Characteristics

Physicians need the following characteristics:

- the intellectual ability required to successfully complete the required academic training and to continue learning life long
- the ability to get along with people and instill confidence
- the stamina required to work long hours
- emotional strength and maturity
- good communication skills.

They should enjoy finding solutions to problems, dealing with people and directing the work of others.

Educational Requirements

Physicians must complete a three or four year **Medical Doctor (MD) degree program** at an accredited university, followed by post-graduate training in family medicine or other specialty.

In Alberta, MD programs are offered by the following institutions.

- The **University of Alberta** in Edmonton. The entrance requirement is satisfactory completion of **at least** two years of university studies with courses in organic and inorganic chemistry, English, physics, biology, biochemistry and statistics.
- The **University of Calgary**. The entrance requirement is completion of at least three years of recommended Arts and Sciences courses at a recognized post-secondary institution.

Because these are quota programs, many applicants who fulfill the entrance requirements cannot be accepted. Successful applicants are selected on the basis of:

- academic grades
- letters of recommendation
- personal interviews
- the results of a Medical College Admission Test (MCAT).

The required university courses may be taken entirely at the University of Calgary or the University of Alberta or, in part, at other post-secondary institutions.

Post-secondary institutions across Alberta offer university transfer programs that allow students to apply up to two years of study toward university Bachelor's degree programs. It is the student's responsibility to ensure that the courses they choose to take will be accepted for credit at the institution to which they wish to transfer. When planning their university studies, prospective students should contact both Faculty of Medicines' admissions offices to ensure that they acquire all of the necessary prerequisites.

In general, the admission requirement for university and university transfer programs is a high school diploma or equivalent with a specified minimum average in English 30, Pure Math 30 and three other appropriate Grade 12 subjects (usually Biology 30, Physics 30 and Chemistry 30).

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

After successfully completing an MD program, there are two ways to become a registered practitioner with the College of Physicians and Surgeons of Alberta:

- training to become a family physician which requires an additional two years.
- training to become a specialist physician which requires an additional five to seven years.

Other Requirements

Under Alberta's Medical Profession Act, you must be a registered member of the College of Physicians and Surgeons of Alberta (CPSA) to practice medicine in Alberta.

Employment and Advancement

(section revised JANUARY 2006)

Many physicians work in private practice or are employed by regional health authorities. Others are employed in:

- medical research
- public health
- occupational medicine
- health administration
- overseas service
- military service.

Physicians are part of the larger National Occupational Classification 3112: General Practitioners and Family Physicians. In Alberta, people employed in this classification work in the **Health Care and Social Assistance** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Health Care and Social Assistance industry)
- **location** in Alberta

- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 5,150 Albertans are employed in the General Practitioners and Family Physicians occupational group which is expected to grow 3.5 to 4.5 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 180 to 240 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since physicians form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for physicians.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Physicians in private practice are self-employed. Their incomes vary considerably depending on location, specialty and the number of patients they see.

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta College of Family Physicians (ACFP) website: www.acfp.ca

Alberta Medical Association (AMA) website: www.albertadoctors.org

College of Family Physicians of Canada (CFPC) website: www.cfpc.ca

College of Physicians and Surgeons of Alberta (CPSA) website: www.cpsa.ab.ca

Medical Council of Canada (MCC) website: www.mcc.ca

Royal College of Physicians and Surgeons of Canada (RCPSC) website: rcpsc.medical.org

Related Occupational Profiles

Canadian Forces Personnel - Commissioned Officer
Chiropractor
Dentist
Geneticist
Geriatric Medicine Specialist
Naturopathic Doctor
Nurse Practitioner
Optometrist
Pathologist
Pediatrician
Pharmacologist
Physiologist
Podiatrist
Psychiatrist
Sport Medicine Physician

Related High School Subjects

Community Health; Language Arts; Mathematics; and Science (Biology; Chemistry; and Physics)

Related Post-Secondary Fields of Study

Health Care and Medical Sciences

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Physicist

Produced DECEMBER 2005

Physicists investigate why our physical environment behaves as it does and solve technological problems.

NOC Number(s): 2111.1
Minimum Education: 4 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **I O D**

Duties

In general, physicists:

- endeavour to understand fundamental processes in nature
- develop practical applications (for example, in electronics, communications, power generation and distribution, aerodynamics, optics and lasers, remote sensing and medicine and health)
- confront and solve technological problems (for example, in diagnostic medical imaging or imaging the interior of the earth).

Many physicists specialize in particular areas such as:

- acoustics (sound and its transmission)
- astronomy and astrophysics (planets, stars and galaxies)
- atmospheric physics (processes in the atmospheres of the Earth and other planets)
- atomic and molecular physics (the structure and behaviour of atoms and molecules)
- biophysics (how living organisms work; for example, how the brain stores and processes information and how plants process light)
- condensed matter physics (solids and liquids, including materials for electronic computer chips, laser diodes, super conductivity, magnetic materials, alloys and plastics)
- cosmology (the universe from creation to the present time)
- econophysics (the application of physical methods to economics)
- environmental physics (the development and application of physical methods to environmental research)
- general relativity (black holes, gravitational radiation)
- geophysics (the Earth, including seismology, meteorology, climatology, aeronomy and oceanography)
- health physics (radiation hazards and how to protect against them)
- mechanics (the influence of forces on matter and the motions of particles in fields of force)
- medical physics (the application of physical principles to the diagnosis and treatment of human disease, including the development and clinical use of radiation tools and other ways of imaging the organs of the body)
- metrology (measurement)
- optics (light, its sources, behaviour and effects)
- photonics (optical networking)
- space and plasma physics (study of the ionized gas existing in space and its impact on various objects, including the earth)
- stable and radioactive isotope physics (the use of isotopic measurements in a wide variety of scientific analyses)
- subatomic physics or particle physics (the fundamental particles and forces in nature)
- thermodynamics (the nature of heat and its effects on matter).

Physicists may study any of these areas by:

- carrying out experiments
- designing sophisticated computer simulations (computational physics)
- searching for and developing theories that organize the results of experiment and computation.

Physicists work with scientists in other fields such as engineering, biology, chemistry, geology, mathematics and computer science, and often combine physics with these sciences.

Working Conditions

Physicists generally work in laboratories, classrooms or offices. They also may work outdoors. Travel is often required.

Personal Characteristics

Physicists need the following characteristics:

- an aptitude for mathematics and an analytical approach to problem solving
- the ability to think independently and creatively
- an interest in building things or understanding how or why things work
- self-motivation and organizational skills
- perseverance
- the ability to work well with others.

They should enjoy synthesizing information and finding innovative solutions to problems, using sophisticated instruments and equipment to perform tasks requiring precision, and supervising the work of others.

Educational Requirements

Most physicists begin their post-secondary education with a four year **Bachelor of Science (B.Sc.) degree in physics**, then go on to earn a master of science (M.Sc.) or a doctoral (PhD) degree in physics or a sub-discipline of physics. Physicists who wish to do original research generally require a PhD and one to five years or post-doctoral research in a university or govenment laboratory. In medical physics, one to two years of after-degree clinical (residency) training is required.

In Alberta, the following post-secondary institutions offer four year degree programs in physics:

- The **University of Alberta** in Edmonton offers four year B.Sc. general and honours programs in physics with specializations in geophysics, mathematical physics and physics; and M.Sc. and PhD programs in physics. The entrance requirement for the bachelor's degree programs is a competitive average (65 to 80 per cent) in English Language Arts 30-1 (or English 30), Pure Math 30 (or Math 30), Physics 30 and two approved Grade 12 subjects (Math 31 recommended). The University of Alberta in Camrose also offers degree programs in physics.

- The **University of Calgary** offers a four year B.Sc. program in physics with specializations in applied physics, chemical physics (honours only) and physics; and M.Sc. and PhD programs in physics. The entrance requirement for the bachelor's degree program is a high school diploma with a competitive average in English Language Arts 30-1 (or English 30), Pure Math 30 (or Math 30), Chemistry 30 and two other subjects selected from specified lists (Math 31 and Physics 30 recommended).
- The **University of Lethbridge** offers four year degree programs, five year combined degree programs, and M.Sc. and PhD programs in physics. The entrance requirement for bachelor's degree programs is an average of at least 65 per cent in English Language Arts 30-1 (or English 30), Physics 30, Pure or Applied Math 30 (or equivalent), Biology 30 or Chemistry 30, and one other appropriate subject (Math 31 recommended).

Post-secondary institutions throughout the province offer university transfer programs that allow students to apply up to two years of study toward university bachelor's degree programs. It is the student's responsibility to ensure that the courses they choose to take will be accepted for credit at the institution to which they wish to transfer.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

(section revised JANUARY 2006)

Physicists may be employed by or work on a contract basis for:

- universities
- government research establishments
- private industry
- organizations involved in public education
- hospitals.

Employment opportunities for physicists vary depending on whether they have a bachelor's, master's or doctoral degree. Individuals who have a B.Sc. or M.Sc. are more likely to be employed in design and development, teaching (at the high

school or college level), administration or sales. Those who have a PhD are more likely to be involved in basic or applied research, teaching at the university level or administration.

Advancement opportunities vary depending on the place of employment and type of work. Physicists involved in research, or research and development may become project supervisors, directors of research laboratories or managers of research departments. Some physicists eventually move into purely administrative/management positions.

Physicists are part of the larger National Occupational Classification 2111: Physicists and Astronomers. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Public Administration**
- **Petrochemicals, Rubber, Plastics and Chemicals Manufacturing**
- **Oil and Gas Extraction**
- **Information, Culture and Recreation**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation**.

About 100 Albertans are employed in the Physicists and Astronomers occupational group which is expected to grow 1.5 to 2.5 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover. (**Note**: Since physicists form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for physicists.)

Note: University professors are classified in a different occupational group. For more information, see the University Professor occupational profile.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Salaries vary widely depending on the requirements of the position and the qualifications of the individual.

No salary data is available for the Physicists and Astronomers occupational group.

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Canadian Association of Physicists (CAP) website careers section: www.cap.ca/careers/

American Institute of Physics (AIP) website: www.aip.org/careersvc/

Society of Physics Students (U.S.) website careers section: www.spsnational.org/cup/

Related Occupational Profiles

Astronomer
Exploration Geophysicist
Forensic Laboratory Analyst

Related High School Subjects

Information Processing; Language Arts; Mathematics; and Science (Biology; Chemistry; and Physics)

Related Post-Secondary Fields of Study

Sciences

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Physiologist

Produced APRIL 2005

Physiologists are scientists who study the whole organism and cellular functioning in humans, animals and plants.

NOC Number(s): 2121.1
Minimum Education: 8 + years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **I O D**

Duties

In the biological sciences, physiology is a fundamental field defining the functions of organs and tissues and their inter-relationships. It employs numerous techniques and approaches including molecular biology, pharmacology, biochemistry, anatomy, cell biology, engineering and computing science. Many physiologists work in research and teaching. In general, they:

- plan and conduct laboratory experiments
- write papers for scientific journals, reports and grant proposals
- sit on university committees and research grant panels
- attend meetings with other scientists and administrators
- educate medical, paramedical and science students about physiology.

Physiologists who have doctoral (PhD) degrees often start their careers as post-doctoral fellows, then become university professors who teach and oversee research programs. They may specialize in studying areas such as:

- the heart and circulatory system
- individual cell function
- hormones and glandular secretions
- the digestive system
- metabolism (the conversion of food to energy)
- the kidneys and associated body fluids
- the reproductive system
- the lungs and respiratory system
- the nervous system at all levels up to co-ordinated neural functions
- the effects of physical activity on various body systems
- the effects of high altitudes on humans
- the effects of radiation on biological systems
- how genes control body functions
- how biological membranes function
- mathematical modeling of physiological processes.

Working Conditions

Physiologists employed by universities usually divide their time between teaching and research. Teaching requires many hours preparing for class, grading papers and meeting with students.

Physiologists who work as full-time researchers spend most of their time in laboratories but also travel to scientific meetings to present their results. They use a wide variety of electronic, optical, chemical and mechanical devices to discover how the body operates. They may work long hours conducting precise experiments and analyzing results.

Personal Characteristics

In common with other scientists, physiologists need the following characteristics:

- good powers of observation
- the ability to integrate data from many sources and test hypotheses rigorously
- an open and inquiring mind
- excellent oral and written communication skills.

They should enjoy synthesizing information (e.g. analyzing data and developing models) and finding innovative solutions to problems, working with equipment and instruments at tasks requiring precision and co-ordinating or supervising the work of others.

Educational Requirements

University graduates who have a Bachelor of Science (B.Sc.) degree in physiology or a related discipline such as pharmacology, biochemistry, biology, physics, chemistry or engineering may work in the drug or biotech industry. Some physiologists train as physicians, then take advanced degrees in physiology. Post-secondary teaching and research positions generally require a doctoral degree (PhD) followed by postdoctoral work (for more information, see the College, Technical or Vocational Instructor and University Professor occupational profiles).

In Alberta, the following post-secondary institutions offer physiology programs:

- The **University of Alberta** in Edmonton offers four year B.Sc. degree programs in physiology, as well as Masters (M.Sc.) and Doctoral (PhD) degree programs in physiology and doctor of medicine (MD) programs. The entrance requirement for the MD program is satisfactory completion of **at least** two years of university studies with courses in organic and inorganic chemistry, English, physics, biology and statistics. The entrance requirement for the B.Sc. program is an average of at least 70 per cent in English 30, Math 30 or Pure Math 30, Biology 30, Chemistry 30 and Physics 30.
- The **University of Calgary** offers four year B.Sc. degree programs in biology, biochemistry and kinesiology, and M.Sc. and PhD degree programs in physiology through the Medical Sciences program. The entrance requirement for the B.Sc. program is completion of one year of university studies. Applicants for admission to first year at the university should have an average of at least 70 per cent in English 30, Math 30 or Pure Math 30, and three other appropriate Grade 12 subjects (Biology 30, Chemistry 30 and Physics 30 recommended).
- The **University of Lethbridge** offers four year B.Sc. degree programs in biochemistry, biological sciences and neuroscience. The University of Lethbridge also offers a PhD in neuroscience. The entrance requirement is an average of at least 65 per cent in English 30, Biology 30, Chemistry 30, and Math 30 or Pure Math 30 plus a fifth Grade 12 subject (Physics 30 recommended).

For information about related degree programs, see the Physician and Kinesiologist occupational profiles. For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Post-secondary institutions throughout Alberta offer university transfer programs that allow students to apply up to two years of study toward university bachelor's degree programs. It is the student's responsibility to ensure that the courses they choose to take will be accepted for credit at the institution to which they wish to transfer.

Employment and Advancement

(section revised JANUARY 2006)

Physiologists are employed by:

- universities and colleges
- hospitals
- institutes related to sports health
- pharmaceutical and biotechnology companies
- firms working in rehabilitation medicine.

Physiologists are part of the larger National Occupational Classification 2121: Biologists and Related Scientists. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Professional and Technical Services**
- **Public Administration**
- **Health Care and Social Assistance**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

About 1,100 Albertans are employed in the Biologists and Related Scientists occupational group which is expected to grow 1.3 to 2.3 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 10 to 30 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since physiologists form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for physiologists.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised SEPTEMBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Biologists occupational group working part-time or full-time earned from **$29,400 to $103,200 a year.** The average salary was **$64,800 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Canadian Physiological Society (CPS) website: http://cps.cfbs.org/home.html

Related Occupational Profiles

Biochemist
Biologist
Biotechnologist
Ecologist
Food Scientist
Geneticist
Microbiologist
Pharmacologist
Physician
Toxicologist

Related High School Subjects

Community Health; Information Processing; Language Arts; Mathematics; and Science (Biology; Chemistry; and Physics)

Related Post-Secondary Fields of Study

Engineering, Architecture and Related Studies; Health Care and Medical Sciences; and Sciences

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For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Physiotherapist

Produced FEBRUARY 2005

Physiotherapists work with patients to plan and carry out individually designed physical treatment programs to restore function and prevent disability from disease, trauma or injury.

NOC Number(s): 3142
Minimum Education: 6 years post-secondary education/training
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: **M I S**

Duties

Physiotherapists may focus on particular clinical areas such as orthopedics, cardiopulmonary and cardiovascular disorders, neurology, geriatrics, burns or sports injuries, rheumatology, oncology, pediatrics and obstetrics. However, in general, they:

- assess physical and functional abilities to identify problems
- develop intervention programs to address problems
- carry out programs that may include patient education, exercises, mobilization or other physical approaches such as electrotherapy or hydrotherapy
- maintain clinical and statistical records
- work in multidisciplinary teams and consult with other professionals as required
- develop and implement screening and preventive health promotion programs
- conduct research in physiotherapy
- provide related education and consulting services.

Working Conditions

Physiotherapists work in a variety of settings including heath clinics, fitness centres, hospitals and long term care facilities. Those who provide direct patient care do a great deal of bending, stretching, standing and reaching. They may have to help transfer patients who have limited or little mobility, and lift and adjust equipment weighing up to 25 kilograms.

Physiotherapists generally work weekdays; however, evening and weekend work is required in many settings.

Personal Characteristics

Physiotherapists need the following characteristics:

- good health and physical stamina
- good co-ordination and manual dexterity
- analytical and problem solving abilities
- the interpersonal skills, patience and understanding required to work with sick and disabled people
- good organizational skills
- good communication skills in person and in writing
- the ability to motivate people.

They should enjoy developing and implementing innovative health promotion programs and dealing with people.

Educational Requirements

Physiotherapists must have a university degree in physiotherapy and complete a period of supervised practical training. By 2010, Canadian universities will offer entry-level education programs in physiotherapy at the master's degree level.

In Alberta, the **University of Alberta** in Edmonton offers a two and a half year, course-based Master of Phyical Therapy (MPT) program that prepares students for entry to physical therapy practice. The entrance requirement is completion of a four year bachelor's degree program with full-year courses in English, human physiology and psychology, and half-year courses in statistics and human anatomy. Students planning their university studies are strongly advised to consult the University of Alberta calendar or website for more detailed information about course requirements.

The University of Alberta Faculty of Rehabilitation Medicine also offers thesis-based Master of Science in Physical Therapy and doctoral (PhD) programs.

Other Requirements

Under Alberta's Physical Therapy Profession Act, only registered members of the College of Physical Therapists of Alberta (CPTA) may call themselves Physiotherapists or Physical Therapists, or use the words physiotherapy or physical therapy to describe or refer to their practice, occupation, profession or business.

Employment and Advancement

(section revised JANUARY 2006)

Physiotherapists may work in settings such as:

- child development centres
- community health centre
- fitness centres, health clubs or spas
- government and health planning agencies
- home care
- nursing homes and other long term care facilities
- hospitals and rehabilitation centres
- physiotherapy clinics
- schools
- sport facilities.

Physiotherapists may advance to supervisory and management positions, or move into university teaching and research positions.

In Alberta, people employed as physiotherapists work in the **Health Care and Social Assistance** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Health Care and Social Assistance industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 1,750 Albertans are employed in the Physiotherapists occupational group which is expected to grow 3.4 to 4.4 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 50 to 80 **new** positions will be created each year **in addition** to job openings created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Physiotherapists occupational group working part-time or full-time earned from **$24,500 to $145,200 a year.** The average salary was **$55,900 a year.**

For information about current collective agreements in the public and not-for-profit sectors, see the Health Sciences Association of Alberta (HSAA) website.

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Physiotherapy Association (APA) website: www.albertaphysio.org

Canadian Physiotherapy Association (CPA) website: www.physiotherapy.ca

College of Physical Therapists of Alberta (CPTA) website: www.cpta.ab.ca

Health Sciences Association of Alberta (HSAA) website: www.hsaa.ca

Related Occupational Profiles

Canadian Forces Personnel - Commissioned Officer
Ergonomist
Kinesiologist
Massage Therapist
Occupational Therapist
Physical Therapy Assistant
Recreation Therapist
Sport Medicine Physician

Related High School Subjects

Community Health; Language Arts; Management and Marketing; Mathematics; Physical Education; and Science (Biology; Chemistry; and Physics)

Related Post-Secondary Fields of Study

Health Care and Medical Sciences

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Plasterer

Produced DECEMBER 2003

Plasterers select, mix and apply gypsum, cement and acrylic mixtures to exterior and interior walls and ceilings to produce plain or decorative surfaces that are fire, weather or sound resistant.

NOC Number(s): 7284.1
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **M O i**

Duties

On the exterior surfaces of buildings, plasterers apply stucco and texture it or embed it with dolomite or quartzite to produce a decorative finish. Or, they may apply exterior insulated finish systems by spreading and texturing thin coats of copolymer.

On interior surfaces, plasterers may use different procedures to apply plaster. When the foundation for the plaster is metal lath (a supportive wire mesh), plasterers:

- apply a preparatory or scratch coat to the lath using a spray gun or a trowel
- broom the surface of the scratch coat so the next coat will adhere to it
- apply a brown coat by hand or with a plaster gun and prepare the surface to accept the appropriate finish
- apply a very thin white coat that may be smoothly finished, textured or ornamental
- brush on water periodically as the final coat is hardening.

When the foundation is cinder block or gypsum lath, a preparatory coat often is not necessary.

Some plasterers also:

- set precast ornamental plaster into walls and ceilings
- apply a single coat of plaster material over interior masonry surfaces, specially manufactured wallboard or drywall prepared with a bonding agent
- do drywall taping
- do industrial fireproofing.

Working Conditions

Plasterers work primarily outdoors stuccoing so there is less work available in the winter. Some plasterers work indoors on interior surfaces. They may work in confined spaces, in damp or dusty conditions, or on benches or from scaffolds. They usually work a 40 hour, five day week with some overtime required to meet construction schedules.

Lifting up to 25 kilograms is routinely required.

Personal Characteristics

Plasterers need the following characteristics:

- strength and stamina
- manual dexterity
- the ability to work from ladders and scaffolds.

They should enjoy working outdoors with little direction or supervision.

Educational Requirements

Plasterers learn **on the job**. They usually start as helpers carrying materials, setting up scaffolds and mixing plaster. Mastering the required sweep and pick-up trowel motion and other plastering skills takes patience and practice.

Employers generally prefer to hire high school graduates and expect plasterers to provide their own tools.

Employment and Advancement

(section revised JANUARY 2006)

Most plasterers are employed by independent contractors working on new construction or alteration jobs. Some plasterers are self-employed and contract their services for smaller jobs. In smaller centres, plasterers may also work as drywall tapers and wall board applicators.

Experienced plasterers may advance to supervisory positions or estimator positions. With additional training, they can transfer their skills to related occupations such as cement finisher, drywall installer, bricklayer, lather-interior systems mechanic or tilesetter.

Plasterers are part of the larger National Occupational Classification 7284: Plasterers, Drywall Installers and Finishers and Lathers. In Alberta, most people employed in this classification work in the **Construction** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- time of year (for seasonal jobs)
- trends and **events** affecting overall employment (especially in the Construction industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 5,450 Albertans are employed in the Plasterers, Drywall Installers and Finishers and Lathers occupational group which is expected to grow 1.8 to 2.8 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 90 to 160 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since plasterers form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for plasterers.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Plasterers, Drywall Installers and Finishers and Lathers occupational group working part-time or full-time earned from **$23,400 to $70,700 a year.** The average salary was **$51,000 a year.**

Other Sources of Information

(section revised MAY 2005)

Alberta Construction Industry "Trade Up!" website: www.careersconstruction.com

Alberta Wall and Ceiling Bureau website: www.awcbedmonton.com

Calgary Construction Association website: www.cca.cc

Construction Sector Council website: www.csc-ca.org

Related Occupational Profiles

Bricklayer
Concrete Finisher
Lather-Interior Systems Mechanic
Tilesetter

Related High School Subjects

Construction Technologies; and Physical Education

Related Post-Secondary Fields of Study

Trades, Industrial and Related Training

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Plastics Processing Technician

Produced FEBRUARY 2004

Plastics processing technicians set up, monitor, troubleshoot and optimize plastics processing equipment (including injection moulding and extrusion equipment).

NOC Number(s): 2233.2
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **O M i**

Duties

In injection moulding, molten plastic material is injected into a steel mould to form individual three-dimensional products such as industrial components, domestic goods or medical parts. Softened plastic quickly cools and hardens in the mould. Then the mould opens, the part is ejected and the process is repeated to produce another part.

Extrusion processes produce continuous products such as plastic pipe, film and sheet goods, or wire and cable covering. Softened plastic material is forced through a metal die to produce the desired shape.

Duties and responsibilities vary depending on the process involved but, in general, plastics processing technicians:

- monitor the operation of automated equipment and record product measurement and output rates
- adjust process conditions to correct part defects, meet product specifications and production requirements, and optimize productivity
- maintain and interpret quality control systems
- set up equipment and troubleshoot problems
- safely start up and shut down automated equipment
- properly install, maintain, handle and store injection moulds and extrusion dies.

Working Conditions

Plastics processing technicians work in manufacturing plants that often operate 24 hours a day. They work shifts that may include nights, weekends and holidays. Working in an industrial environment often requires wearing safety gear such as eye and ear protection and steel-toed boots to reduce the risk of injury.

Lifting up to 25 kilograms is routinely required.

Personal Characteristics

Plastics processing technicians need the following characteristics:

- manual dexterity
- the ability to stand for long periods of time
- the ability to perform repetitive tasks and pay attention to details
- mechanical ability
- the problem solving skills required to correct processing and equipment related problems
- the communication and interpersonal skills required to work effectively in a team environment.

They should enjoy performing tasks requiring precision, taking a methodical approach to their work and assisting engineers.

Educational Requirements

Plastics processing technicians need:

- basic math skills
- a working knowledge of the processing characteristics of common plastics materials

- the knowledge and skills required to set up and maintain automated processing equipment
- related safety training.

In Alberta, most plastics processing technicians are **trained on the job**. Employers may require applicants to have one or more of the following qualifications:

- experience working in manufacturing or production environments
- experience working with small tools, forklifts or pallet jacks
- related post-secondary education or training (eg. a minimum of one semester in materials engineering or manufacturing technology, or completion of the first and second periods of millwright or related apprenticeship training)
- a Fourth Class Power Engineering Certificate (for more information, see the Power Engineer occupational profile).

Employment and Advancement

(section revised JANUARY 2006)

Plastics processing technicians are employed by large and small plastics manufacturing firms.

Experienced plastics processing technicians may advance to supervisory positions or move into related positions in quality control and testing, equipment maintenance or costing and production estimating. Further education may be required to advance to management positions.

Plastics processing technicians are part of the larger National Occupational Classification 2233: Industrial Engineering and Manufacturing Technologists and Technicians. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Professional and Technical Services**
- **Oil and Gas Extraction**
- **Metals, Metal Fabrication and Machinery Manufacturing**
- **Other Manufacturing**
- **Construction**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 1,450 Albertans are employed in the Industrial Engineering and Manufacturing Technologists and Technicians occupational group which is expected to grow 1.6 to 2.6 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 20 to 40 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since plastics processing technicians form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for plastics processing technicians.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Industrial Engineering and Manufacturing Technicians occupational group working part-time or full-time earned from **$20,800 to $76,900 a year.** Salaries for plastics processing technicians are generally toward the lower end of this range.

Related Occupational Profiles

Materials Engineering Technologist
Mechanical Engineering Technologist
Millwright
Photographic Processing Technician
Tool and Die Maker

Related High School Subjects

Language Arts; Mathematics; Physical Education; and Science (Physics)

Related Post-Secondary Fields of Study

Trades, Industrial and Related Training

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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OCC info Alberta Occupational Profiles

Alberta Human Resources and Employment

Plumber

Apprenticeship and Industry Training

Produced FEBRUARY 2006

Plumbers plan, install and service plumbing systems, fixtures, piping equipment and controls.

NOC Number(s): 7251
Minimum Education: Apprenticeship Trade - Grade 12
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: **O i m**

Duties

On construction sites, plumbers start by "roughing in" after the frame and roof of a new building are in place. In general, they:

- study the building plans and specifications to determine the layout for plumbing and related materials
- locate and mark positions for connections and fixtures
- cut holes through walls and floors to accommodate pipes
- select the type and size of pipe required and measure, cut, thread, bend, clamp, solvent cement or solder pipe
- assemble and install valves and fittings
- join pipe sections and secure them in position
- test pipe systems for leaks
- install underground storm sanitary and water piping systems.

Plumbers return to the construction site after the plasterers or drywallers, tilesetters and floorcovering installers have completed their work and do the "finishing" work such as installing sinks, tubs and toilets.

Plumbers may specialize in the types of work they do:

- installing water conditioners
- installing plumbing in houses under construction
- installing plumbing in commercial, institutional, industrial or public buildings
- renovating, maintaining and repairing existing plumbing.

In smaller communities, plumbers generally do a wider variety of plumbing and plumbing-related jobs such as installing private sewage disposal systems and potable water distribution systems.

Working Conditions

Working conditions vary from one job to another. Plumbers may be required to stand all day or work in cramped, awkward positions. There is some risk of injury when working with rough metals, power tools and pipe-joining equipment. When roughing-in, the plumbers have little protection from the weather.

Plumbers may required to lift items weighing over 25 kilograms.

Personal Characteristics

Plumbers need the following characteristics:

- physical strength and stamina
- the agility to work in cramped positions
- mechanical ability
- the ability to work independently or with others.

They should enjoy working with little supervision and working in a variety of conditions.

Educational Requirements

To work in Alberta, plumbers must be registered apprentices or certified journeymen.

To **register** with **Alberta Apprenticeship and Industry Training**, apprentices must:

- have at least an Alberta high school diploma with Math 10 or 13, Pure Math 10 or Applied Math 10 (or equivalent) or pass an entrance exam
- find a suitable employer who is willing to hire and train an apprentice. Most employers prefer to hire high school graduates and may select apprentices from among their current employees.

First or second class gasfitters who are certified in Alberta, and want to be certified as plumbers as well, must apprentice in the plumber trade.

Applicants who are not already certified in Alberta as a Gasfitter (1st Class or 2nd Class) must complete an apprenticeship program that includes both the plumber and gasfitter 2nd class trades.

The **term of apprenticeship** is four years (four 12-month periods) that include a minimum of 1,500 hours of on-the-job training and eight weeks of technical training each year. High school students can become apprentices and gain credits toward apprenticeship training and a high school diploma at the same time through the Registered Apprenticeship Program (RAP).

Applicants who have related training or work experience may be eligible for credit or certification.

Plumber apprentices may attempt the Interprovincial Exam in the final period of their apprenticeship training and, if successful, are granted a Red Seal (which is recognized in most parts of Canada).

Technical training is arranged by Alberta Apprenticeship and Industry Training and is currently offered at:

- Medicine Hat College
- the Northern Alberta Institute of Technology (NAIT) in Edmonton and Fairview
- Red Deer College
- the Southern Alberta Institute of Technology (SAIT) in Calgary.

Pre-employment programs for prospective apprentices and continuing education programs for journeymen may be offered on an as needed basis by the institution(s) listed above or other schools.

Employment and Advancement

Plumbers are employed by construction contractors, plumbing repair shops and large organizations. Some are self-employed.

Experienced plumbers may advance to supervisory positions such as foreman or estimator, or start their own contracting businesses. Alberta certified journeyman plumbers who have the supervisory or management skills required by industry may apply for an Achievement in Business Competencies Blue Seal by contacting Alberta Apprenticeship and Industry Training.

In Alberta, most people employed as plumbers work in the **Construction** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- time of year (for seasonal jobs)
- trends and **events** affecting overall employment (especially in the Construction industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 5,200 Albertans are employed in the Plumbers occupational group which is expected to grow 2.2 to 3.2 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 110 to 170 **new** positions will be created each year **in addition** to job openings created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Apprentice plumbers earn at least 50 per cent of the journeyman wage rate in their place of employment in the first year, 60 per cent in the second, 70 per cent in the third and 80 per cent in the fourth. According to the Alberta Provincial Apprenticeship Committee for this trade, journeyman wage rates vary, but generally range from **$18 to $24 an hour plus benefits** (2005 estimate).

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Plumbers occupational group working part-time or full-time earned from **$19,000 to $120,000 a year.** The average salary was **$50,800 a year.**

Other Sources of Information

Alberta Apprenticeship and Industry Training website: www.tradesecrets.org

Alberta Construction Industry "Trade Up!" website: www.careersconstruction.com

Calgary Construction Association website: www.cca.cc

Construction Sector Council website: www.csc-ca.org

Related Occupational Profiles

Construction Craft Labourer
Gasfitter
Home Inspector
Instrument Technician
Refrigeration and Air Conditioning Mechanic
Safety Codes Officer
Safety Officer
Sprinkler Systems Installer
Steamfitter-Pipefitter

Related High School Subjects

Construction Technologies; Fabrication Studies; Mathematics; and Physical Education

Related Post-Secondary Fields of Study

Trades, Industrial and Related Training

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Podiatrist

Produced FEBRUARY 2005

Podiatrists diagnose and treat diseases, deformities and injuries of the human foot and help patients prevent foot-related disorders.

NOC Number(s): 3123.1
Minimum Education: 8 + years post-secondary education/training
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: **I M O**

Duties

Podiatrists are health care professionals who are primarily concerned with patients' feet, just as dentists are primarily concerned with patients' mouths and optometrists are primarily concerned with patients' eyes. Podiatrists deal with all types of foot disorders including:

- ingrown toenails
- tumours and cysts
- bunions and bone growths
- warts, corns and calluses
- deformities from birth or neglect
- sprains and fractures
- abnormalities of gait and posture
- skin disorders.

In general, podiatrists:

- assess and diagnose foot problems by observing symptoms, reading x-rays and interpreting medical test results (e.g. from blood tests, urinalysis, micro-organism cultures)
- treat foot problems by performing surgery on soft tissue and bone, prescribing orthotic devices, providing palliative care or, in some cases, prescribing medication.

Working Conditions

Most podiatrists are self-employed and are therefore free to set their own hours. They generally work regular office hours but, for the convenience of their patients, may work some evenings and weekends.

Podiatrists spend part of their working hours standing, conducting examinations and treating patients, and the rest of their working hours sitting at a desk, consulting with patients and doing the required paperwork.

Personal Characteristics

Podiatrists need the following characteristics:

- an interest in assisting people
- an interest in science
- the academic ability and ambition required to complete advanced studies successfully
- manual dexterity
- average physical strength
- good eyesight.

They should enjoy working with people, following a routine, and using instruments and equipment to perform tasks requiring precision.

Educational Requirements

One post-secondary institution in Canada and seven in the United States provide training through a four year program leading to a Doctor of Podiatric Medicine (DPM) degree:

- **Universite de Quebec a Trois-Rivieres** in Quebec (instruction in French)
- **Barry University School of Podiatric Medicine** in Miami Shores, Florida
- **Samuel Merritt College** in San Francisco
- **New York College of Podiatric Medicine** in New York
- **Ohio College of Podiatric Medicine** in Cleveland
- **Temple University School of Podiatric Medicine** in Philadelphia
- **Rosalind Franklin University of Medicine and Science** in Chicago
- **University of Osteopathic Medicine and Health Sciences - The College of Podiatric Medicine and Surgery** in Des Moines, Iowa.

The **minimum** admission requirement for these programs is three pre-professional years at a recognized college or university with course work in biology, chemistry, physics, mathematics and English.

In most cases, applicants must have a Bachelor of Science (B.Sc.) or a Bachelor of Arts (BA) degree and successfully complete the Medical College Admissions Test (MCAT) to be considered for admission.

The first two years in podiatry college consist of classroom instruction and laboratory work in sciences such as anatomy, microbiology, biochemistry, physiology, pharmacology and pathology. In the final two years, the emphasis is on clinical practice and on practical experience in all departments including surgery.

Graduates of four year podiatry programs generally complete two to three years of residency after graduation. Therefore, it usually takes students **a total of eight to eleven years** to complete their studies.

Other Requirements

Under Alberta's Podiatry Act, only registered members of the Alberta Podiatry Association (APA) may call themselves Podiatrists. Registered members provide podiatric services as defined in the Podiatry Act and the Drugs, Chemicals and Compounds Regulation.

Employment and Advancement

(section revised JANUARY 2006)

Most podiatrists work in general practice, either alone or in a group situation.

Advancement generally takes the form of becoming a recognized expert in specific types of foot problems or treatments.

Podiatrists are part of the larger National Occupational Classification 3123: Other Professional Occupations in Health Diagnosing and Treating. In Alberta, people employed in this classification work in the **Health Care and Social Assistance** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Health Care and Social Assistance industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

About 250 Albertans are employed in the Other Professional Occupations in Health Diagnosing and Treating occupational group which is expected to grow 2.1 to 3.1 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover. (**Note**: Since podiatrists form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for podiatrists.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

There are relatively few podiatrists in Canada and most are located in large urban centres. Employment growth is best in smaller communities that currently have no specialized foot care services.

Salary

Podiatrists' earnings vary depending on:

- personal ability and reputation
- efficiency of practice management
- years of experience
- size and location of the practice
- government limits on expenditures for podiatric services.

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

Alberta Podiatry Association (APA) website: www.albertapodiatry.com

Canadian Podiatric Medical Association (CPMA) website: www.podiatrycanada.org

Related Occupational Profiles

Chiropractor
Naturopathic Doctor
Optometrist
Physician
Reflexologist

Related High School Subjects

Community Health; Language Arts; Management and Marketing; Mathematics; Physical Education; and Science (Biology; Chemistry; and Physics)

Related Post-Secondary Fields of Study

Health Care and Medical Sciences

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Police Officer

Produced APRIL 2003

Police officers help to protect citizens and their property, maintain public peace, prevent and detect crime, apprehend those who break the law, process court requirements, handle traffic problems, enforce regulations, and act as agents of social change within the community to promote safer neighbourhoods.

NOC Number(s): 6261
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **M D S**

Duties

In their daily work, police officers perform many duties ranging from enforcing the law and apprehending criminals, to controlling traffic and arbitrating domestic disputes. Police work does not always involve a physical act of protection or the apprehension of a law breaker. It also involves activities such as:

- crime prevention activities
- helping victims of crime
- working with community groups to identify and solve policing problems of mutual concern
- forensic investigations
- administrative work such as writing up shift reports
- court appearances.

Some officers do undercover work.

Working Conditions

Police officers may work a regular five-day, 40 hour week or a compressed work week with 10 or 12 hour shifts. Weekend, holiday and night shifts are usually required because police protection must be provided around the clock.

Officers work both indoors and outdoors in all kinds of weather and may be required to stand or walk for hours at a time, or ride in a vehicle for a complete shift. At times, they have to use force and may be required to lift in excess of 25 kilograms in emergency situations.

Police officers often work in stressful, emotional situations and sometimes work in dangerous situations (e.g. dealing with domestic and public disputes, arresting lawbreakers, pursuing speeding motorists).

Personal Characteristics

Personal characteristics such as honesty, integrity, maturity, good judgement, patience, intelligence, good observation skills and basic good humour are essential in this occupation. Police officers also need to be:

- physically fit and able to meet visual acuity standards
- able to work with all kinds of people in a variety of situations
- able to use their own initiative and work with a minimum of supervision
- able to work as part of a team.

They should enjoy having clear rules and guidelines for analyzing information and investigations, taking charge of situations and dealing with people.

Educational Requirements

(section revised JUNE 2005)

Specific qualifications required by police departments **vary**. They **may** require:

- a high school diploma or related post-secondary diploma (or have no stated minimum education requirement)
- character references or psychological testing
- Canadian citizenship or legal permanent resident status
- a valid driver's licence and good driving record
- no criminal convictions or criminal charges pending before the courts
- evidence of writing, keyboarding and computer skills
- valid first aid and cardioplumonary resuscitation (CPR) certificates.

Candidates must be physically fit, meet minimum vision requirements and be in good health. The minimum application age varies from 18 to 21 years but the average age of new recruits is generally about 26 or 27 years of age. Related post-secondary education, the ability to speak a second language and knowledge of Alberta's multi-cultural and volunteer communities are definite assets.

In Alberta, education programs related to law enforcement are offered by the following post-secondary institutions:

- **Athabasca University** offers a four year Bachelor of Professional Arts degree program in Criminal Justice. This program is available to students who have a two year diploma in criminal justice-related areas from an accredited college or technical institute program.
- **CDI College of Business, Technology and Health Care** in Calgary and Edmonton offers a 42-week Policing and Protection Services program.
- **Columbia College**, a private vocational school in Calgary, offers Criminal Justice Certificate and Diploma programs. These programs may be taken as 25 week full-time programs or 50 week part-time programs. The entrance requirements for the Certificate program are a high school diploma with at least 60 per cent in English 30 and Math 30 or equivalent, a successful interview and a criminal record check.
- **Grant MacEwan College** in Edmonton offers a two year Police and Security diploma program with a specialization in Police Studies. The entrance requirement is a high school diploma or equivalent with at least 65 per cent in English 30 (or at least 75 per cent in English 33 or a skills assessment). A criminal record check and fitness test are required. Grant MacEwan College also offers a nine month Aboriginal Police Studies program.
- **Lethbridge Community College** offers a two year Criminal Justice Diploma. The entrance requirement is a high school diploma or equivalent. Applicants are required to take a computerized placement test, complete a questionnaire and attend an interview with a faculty member. A medical examination and eyesight/colour vision testing are recommended. Lethbridge Community College also offers a Criminal Justice certificate designed for aboriginal people.
- **Medicine Hat College** offers a two year Police and Security diploma program with a Police major. The entrance requirements are a high school diploma or with at least 60 per cent in English 30 or equivalent, and completion of a Standard First Aid and CPR certificate. An interview and program orientation are required, and a physical fitness test may be required. This program is offered in partnership with Grant MacEwan College.
- **Mount Royal College** in Calgary offers a four year applied degree program in Justice Studies. The entrance requirement is a high school diploma with English 30, Pure or Applied Math 30 and Social Studies 30 or equivalent.
- **Northern Lakes College** in Grouard offers a 10 month Aboriginal and Community Policing certificate program. Applicants must be at least 19 years old and have successfully completed English 23 and Math 13 or Applied Math 10 or equivalent. A valid driver's licence, criminal record check, fitness assessment, medical exam and personal interview are also required. Graduates of this program may apply for credit toward police and security programs at Lethbridge Community College, Grant MacEwan College or Athabasca University.
- **NorQuest College** in Edmonton offers a 40-week Aboriginal Policing and Security certificate program. Applicants must be at least 19 years old and have successfully completed a Grade 10 English and Math or equivalent. A valid driver's licence, fitness assessment and medical exam are also required.
- The **University of Alberta** in Edmonton offers a four year Bachelor of Arts (BA) degree program in criminology. The entrance requirement is completion of one year of an undergraduate degree program (usually an Arts program) with a minimum grade point average of 6.0/9. This is a quota program so higher than minimum marks may be required for admission. Two letters of reference and personal suitability for employment in the criminal justice system are also required.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

(section revised JANUARY 2006)

In Alberta, police officers are employed by:

- the Royal Canadian Mounted Police
- municipal police services
- First Nation police services
- rail services
- special constable services.

Following induction, recruits undergo a period of basic training that includes classroom lectures, physical fitness activities and in-service street policing. Training is followed by assignment to a patrol or traffic division. Advanced and specialized training is provided later for experienced officers.

Officers have the opportunity to advance in the service, although promotion generally requires several years of employment.

Police officers are part of the larger National Occupational Classification 6261: Police Officers (Except Commissioned). In Alberta, most people employed in this classification work in the **Public Administration** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Public Administration industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 5,350 Albertans are employed in the Police Officers (Except Commissioned) occupational group which is expected to grow 1.5 to 2.5 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 80 to 140 **new** positions will be created each year **in addition** to job openings created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Police Officers (Except Commissioned) occupational group working part-time or full-time earned an average salary of **$64,900 a year**.

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Related Occupational Profiles

Bylaw Enforcement Officer
Canadian Forces Personnel - Non Commissioned
Conservation Officer
Correctional Officer
Emergency Medical Responder
Emergency Medical Technician - Ambulance
Emergency Medical Technologist - Paramedic
Fish and Wildlife Officer
Park Warden
Private Investigator
Security Guard

Related High School Subjects

Community Health; Information Processing; Language Arts; Languages (other than English); Legal Studies; Mathematics; Physical Education; and Social Studies

Related Post-Secondary Fields of Study

Social, Community and Protective Services

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Political Scientist

Produced JANUARY 2006

Political scientists study the institutions, laws and methods used in political process and government, influences that shape government policy, practices and organization (politics) and fundamental questions about related concepts (for example, power, freedom, security, justice, democracy).

NOC Number(s): 4169.6
Minimum Education: 6 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **I D M**

Duties

In general, political scientists:

- analyze the policies, public issues, legislation or the operations and activities of governments, business corporations and regional, non-governmental and international organizations
- research institutions, political processes and public policy and law relating to domestic and international politics (for example, study public opinion, political parties, elections, interest groups, social movements, non-governmental organizations, inter-govermental relations, international law and organization)
- collect, analyze and interpret data (for example, election results and surveys, public documentation)
- publish the results of their research in academic publications, written reports or through presentations at public seminars
- participate, organize, manage or run as candidates in election campaigns
- advise elected representatives or political parties in municipal, provincial or federal politics
- advise governmental and non-governmental organizations
- serve on administrative boards and commissions
- provide media commentary on public policy and political issues.

Political scientists usually specialize in particular areas such as:

- political theory, economy or behaviour
- comparative government
- municipal, provincial, national or international government
- public policy and administration
- constitutional law
- international relations and strategic studies.

Working Conditions

Political scientists working in universities or colleges divide their time between teaching, administrative duties, community outreach and research. Travel to meetings and conferences is often required. Tight schedules, deadlines and heavy workloads can be stressful.

Political scientists employed by political parties may work long, irregular hours, especially during election campaigns. Those employed in the diplomatic service or by international or non-governmental organizations also may attend numerous social functions.

Personal Characteristics

Political scientists need the following characteristics:

- a strong interest in political affairs and research
- strong written and oral communication skills
- strong interpersonal skills

- good time management skills
- critical thinking skills and the ability to understand the world from a variety of political, cultural and community perspectives
- initiative and the ability to work effectively in groups and alone.

They should enjoy gathering, synthesizing and evaluating information, taking responsibility for projects, and taking a methodical approach to gathering information.

Educational Requirements

The preferred credential for political scientists is a master's or doctoral degree in political science. Doctoral (PhD) degrees are required for college and university teaching positions.

The standard admission requirement for a master's degree program is a four year bachelor's degree in a related discipline with an acceptable grade point average (GPA) in the last two years of study. In Alberta, the following institutions offer **four year** degree programs related to political science.

- **Athabasca University** offers a four year Bachelor of Arts (BA) degree program in Political Economy by distance education. Applicants must be at least 16 years of age.
- The **King's University College** in Edmonton offers a four year BA degree program in Politics, History and Economics. The entrance requirement is an average of at least 60 per cent in five appropriate Grade 12 subjects including English Language Arts 30-1, or equivalent.
- **Mount Royal College** in Calgary offers a four year Applied Bachelor Degree program in Policy Studies. The entrance requirement is an average of at least 60 per cent in English Language Arts 30-1 (or English 30), Pure Math 30 (or Math 30), Social Studies 30 and two other appropriate Grade 12 subjects.
- The **University of Alberta** in Edmonton offers BA and BA (Honors) degree programs in Political Science. The entrance requirement is a competitive average in English Language Arts 30-1 (or English 30), a 30 level language other than English or Pure Math 30 (or Math 30), one 30 level science and two other approved 30 level subjects. The University of Alberta also offers master's and doctoral degree programs in political science.
- The **University of Calgary** offers four year BA and five year BA (Co-op) programs in Political Science. The entrance requirement is a competitive average in English Language Arts 30-1 (or English 30), Pure Math 30 or Math 30 or 31, and three of the following: Biology 30, Chemistry 30, Physics 30, Social Studies 30, Science 30, a 30 level language other than English, one five credit Grade 12 subject. The University of Calgary also offers master's and doctoral programs in political science.
- The **University of Lethbridge** offers four year BA, Bachelor of Arts and Science, and Bachelor of Management degree programs and five year combined degree programs in Political Science. The entrance requirement is an average of at least 65 per cent in English Language Arts 30-1 (or English 30), three other appropriate 30 level subjects and a fifth Grade 12 subject. Pure or Applied Math 30 (or Math 30 or 33, or equivalent) is required for admission to the Management program. The University of Lethbridge also offers a master's degree program in political science.

Post-secondary institutions throughout the province offer university transfer programs that allow students to apply up to two years of study toward university bachelor's degree programs. It is the student's responsibility to ensure that the courses they choose to take will be accepted for credit at the institution to which they wish to transfer.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

Graduates of bachelor's degree programs in political science may work in:

- partisan (connected to a political party) and non-partisan positions in parliament, legislative assemblies, municipalities, government departments, crown corporations and regulatory agencies (for example, caucus researchers, executive or special assistants to ministers, research officers)
- research bureaus and organizations that conduct surveys and opinion polls
- consular offices
- consulting firms that advise citizens' groups, large banks and corporations
- advocacy-research organizations that analyze government policies (for example, non-governmental organizations operating in the Third World)
- the news media (as political reporters)
- businesses or corporations (as government relations specialists).

Political scientists who have master's or doctoral degrees may work in:

- senior administrative positions in municipal, provincial or federal government departments
- colleges or universities, teaching and conducting research
- international service organizations such as the United Nations or the World Bank
- private consulting firms or thinktanks, conducting research.

Self-employed consultants work on short-term contracts and may experience periods of unemployment. In electoral politics, job security is dependent on election results.

Political scientists are part of the much larger National Occupational Classification 4169: Other Professional Occupations in Social Science. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Professional and Technical Services**
- **Public Administration**
- **Educational Services**
- **Health Care and Social Assistance**

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 350 Albertans are employed in the Other Professional Occupations in Social Science occupational group which is expected to grow 1.5 to 2.5 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover. (**Note**: Since political scientists form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for political scientists.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Salaries for political scientists vary considerably.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Other Professional Occupations in Social Science occupational group working part-time or full-time earned from **$31,800 to $79,600 a year.** The average salary was **$54,900 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Canadian Political Science Association (CPSA) website: www.cpsa-acsp.ca

Related Occupational Profiles

Foreign Service Officer
Historian
Lawyer
Sociologist

Related High School Subjects

Communication Technology; Information Processing; Language Arts; Mathematics; Science; and Social Studies

Related Post-Secondary Fields of Study

Social Sciences, Law and Religious Studies

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Pollution Control Technologist

Produced SEPTEMBER 2005

Pollution control technologists conduct inspections, tests and field investigations to determine the extent of existing air, water or soil contamination and find ways to control and prevent contamination.

NOC Number(s): 2211.1
Minimum Education: 2 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **O I M**

Duties

Pollution control technologists often work as part of a team of environmental specialists that may be primarily concerned with:

- air quality
- water quality
- soil quality
- noise control
- hazardous waste control
- a combination of the above.

Duties and responsibilities vary depending on their area of specialization but, in general, pollution control technologists:

- conduct inspections of industrial facilities, municipal facilities and waste management facilities to determine compliance with standard operating procedures or environmental legislation
- collect and analyze environmental samples such as soil samples, gas samples from industrial emissions or water samples from streams
- set up, operate and maintain environmental monitoring equipment and test instrumentation in fixed or mobile stations
- conduct environmental audits in solid waste, air and water management
- prepare environmental reports and maintain records
- make recommendations regarding the equipment and procedures to be used in removing or reducing the level of pollutants.

For a description of the duties performed by technologists who work primarily in laboratories analyzing samples, see the Chemical Technologist profile.

Working Conditions

Working conditions range from pleasant office environments to unpleasant outdoor environments (for example, working in bad weather conditions or around odorous substances, pollutants or hazardous wastes). Some jobs involve a lot of physical activity including lifting equipment weighing up to 25 kilograms, travel to field sites or being away from home for several days or weeks at a time.

Personal Characteristics

Pollution control technologists need the following characteristics:

- the patience and perseverance required to gather and test field samples
- the ability to ensure legal compliance tactfully but persistently
- good observation and analytical skills
- the ability to be innovative and creative
- the ability to work independently as well as part of a team
- good verbal and written communication skills.

They should enjoy working with tools and instruments at tasks requiring precision, analyzing data to find solutions to problems, taking a methodical approach to their work and supervising others.

Educational Requirements

Most pollution control technologists have **related post-secondary education** such as a diploma in biological or environmental sciences, or a degree in biology, chemistry, biochemistry or environmental science.

Post-secondary institutions throughout Alberta offer programs in biology, chemistry, biochemistry, environmental science and related disciplines. The following institutions offer two year diploma programs in environmental science or technology:

- **Keyano College** in Fort McMurray offers a two year Environmental Technology diploma program. The entrance requirement is a high school diploma with Grade 11 math, chemistry and biology.
- **Lakeland College** in Vermilion offers two year diploma programs in Agro-Environmental Technology, Conservation and Vegetation Management Technology, Environmental Conservation and Reclamation, Environmental Protection Technology, and Natural Resources Technology. The entrance requirement for all programs is a high school diploma with English Language Arts 30-1 or English 30 (or 65 per cent in English Language Arts 30-2 or English 33), Math 30 or Pure Math 30 (or 65 per cent in Applied Math 30 or Math 33), Biology 30 and Chemistry 30.
- **Lethbridge Community College** offers a two year Environmental Sciences diploma program with specializations in renewable resource management, and environmental assessment and restoration. The entrance requirement is a high school diploma with English Language Arts 30-1, Biology 20, Chemistry 20 and Applied Math 20, or equivalent. Applicants who do not have at least 70 per cent in ELA 30-1 and Applied Math 20 will be required to complete a computerized placement test. **Medicine Hat College** also offers the first year of this program.
- **Mount Royal College** in Calgary offers a one year certificate program in Environmental Technology. This program is designed for students who have experience in environmental management or related fields.
- The **Northern Alberta Institute of Technology (NAIT)** in Edmonton offers a two year Biological Sciences Technology diploma program with specializations in environmental sciences and renewable resources. The entrance requirement is a high school diploma with English Language Arts 30-1 or 30-2, Chemistry 30, Biology 30 and Applied or Pure Math 30 (or equivalent).
- **Olds College** offers a two year Land and Water Resources diploma program. The entrance requirement is a high school diploma with Pure or Applied Math 20 (or equivalent) and Chemistry 20, Biology 20 or Science 30.
- The **Southern Alberta Institute of Technology (SAIT)** in Calgary offers two year Environmental Technology diploma program. The entrance requirement is a high school diploma with at least 60 per cent in Pure Math 30 and Chemistry 30, and at least 50 per cent in English Language Arts 30-2 (or equivalent).

The following post-secondary institutions offer degree programs in environmental science:

- **Concordia University College of Alberta** in Edmonton offers three and four year B.Sc. degree programs in environmental science. The entrance requirement is an average of at least 60 per cent in English Language Arts 30-1, Pure Math 30, Chemistry 30 and Biology 30 (or equivalent) and one other appropriate 30-level subject.
- **The King's University College** in Edmonton offers three and four year Bachelor of Arts and B.Sc. degree programs in environmental studies. The entrance requirement is an average of at least 60 per cent in English Language Arts 30-1, Pure Math 30, and one of Biology 30 or Chemistry 30 (both are recommended), and two other approved 30-level courses.
- **Lakeland College** in Vermilion a Bachelor of Applied Environmental Management degree program with a reclamation/remediation stream and a monitoring/environmental protection stream. The entrance requirement is successful completion of a related two year diploma program from a recognized post-secondary institution.
- The **University of Alberta** offers four year degree programs in Environmental and Conservation Sciences (Edmonton), Environmental and Conservation Sciences/Native Studies Combined (Edmonton) and Environmental Science (Camrose). The entrance requirement for these programs is a competitive average of 65 to 80 per cent in English Language Arts 30-1, Pure Math 30, Chemistry 30, Biology 30 and one other Grade 12 subject.
- The **University of Calgary** offers a four year B.Sc. degree program in Environmental Science. The entrance requirement is a high school diploma with a competitive average in English Language Arts 30-1, Pure Math 30 (or equivalent), Chemistry 30, two of the following: Biology 30, Math 31, Physics 30, and one other 30-level subject selected from an approved list. Biology 30 is required for the biological sciences concentration. Students must complete a year of appropriate university studies before being admitted to this program.

- The **University of Lethbridge** offers a four year B.Sc. degree program in Environmental Science. The entrance requirement is an average of at least 65 per cent in English Language Arts 30-1, Biology 30, Chemistry 30, Pure Math 30 (or equivalent) and a fifth Grade 12 subject (Math 31 recommended).

Post-secondary institutions throughout the province offer university transfer programs that allow students to apply up to two years of study toward university bachelor's degree programs. It is the student's responsibility to ensure that the courses they choose to take will be accepted for credit at the institution to which they wish to transfer.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Other Requirements

Certification is voluntary. The Alberta Society of Engineering Technologists (ASET) offers certification for graduates of recognized education programs who have two years of successful experience in industry.

Employment and Advancement

(section revised JANUARY 2006)

Pollution control technologists may work for the following types of organizations:

- government research laboratories or inspection and maintenance departments
- environmental consultants
- electric utility generation facilities
- water and wastewater treatment plants
- private research organizations
- environmental monitoring agencies
- waste management companies
- oil and gas companies
- petrochemical companies
- pulp and paper companies.

Pollution control technologists sometimes work as inspectors, instrument specialists, technical representatives for equipment manufacturers, or in other fields directly related to environmental investigation and enforcement.

In large organizations, experienced technologists may advance to supervisory and management positions.

Pollution control technologists are part of the much larger National Occupational Classification 2211: Chemical Technologists and Technicians. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Petrochemicals, Rubber, Plastics and Chemicals Manufacturing**
- **Professional and Technical Services**
- **Oil and Gas Extraction**
- **Public Administration**
- **Food and Beverage Products Manufacturing**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 2,150 Albertans are employed in the Chemical Technologists and Technicians occupational group which is expected to grow 1.6 to 2.6 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 30 to 60 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since pollution control technologists form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for pollution control technologists.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Chemical Technologists and Technicians occupational group working part-time or full-time earned from **$23,500 to $89,300 a year.** The average salary was **$53,600 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Environment website: www3.gov.ab.ca/env/

Alberta Society of Engineering Technologists (ASET) website: www.aset.ab.ca

Canadian Council for Human Resources in the Environment Industry (CCHREI) website: www.cchrei.ca

Canadian Environmental Certification Approvals Board (CECAB) website: www.cecab.org

Environmental Services Association of Alberta (ESAA) website: www.esaa.org

Related Occupational Profiles

Biological Technician
Biologist
Chemical Engineering Technologist
Chemical Technologist
Environmental Engineer
Hazardous Waste Management Technologist
Hydrometric Technician/Technologist

Related High School Subjects

Energy and Mines; Forestry; Information Processing; Language Arts; Mathematics; Physical Education; Science (Biology; Chemistry; and Physics); and Wildlife

Related Post-Secondary Fields of Study

Engineering and Science Technologies; Environment, Forestry and Related Studies; and Sciences

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For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Postal/Wicket Clerk

Produced NOVEMBER 2005

Postal/wicket clerks provide postal services for customers and record transactions at sales counters and postal wickets.

NOC Number(s): 1461.1
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus below average occupational growth in Alberta
Interests: **M i s**

Duties

For simplicity, postal/wicket clerks are called postal clerks for the remainder of this profile. In general, they:

- greet customers and answer questions
- rent postal boxes and sell postage stamps, money orders and special envelopes
- use a computerized system to weigh mail, determine the class of mail and calculate postage
- fill out forms for special services such as registered, Priority Post or cash-on-delivery (COD) mail
- set postage meters
- collect payments
- cash in money orders
- put undelivered parcels away, retrieve them when customers come to claim them and complete any required documentation.

In small Canada Post offices, postal clerks also may move heavy mail sacks. In retail postal outlets, they may have additional responsibilities such as maintainting inventory or helping to keep the store clean.

Working Conditions

Postal clerks work in post offices and postal outlets located in retail establishments. They may work full-time or part-time shifts that include evenings (and weekends in retail outlets). Some are required to wear uniforms supplied by employers. In postal outlets with smaller mail volumes, postal clerks may work alone.

Postal clerks are on their feet for most of their shifts and may be required to routinely lift items weighing up to 22.7 kilograms.

Personal Characteristics

Postal clerks need the following characteristics:

- the ability to handle and account for stamps, cash and other supplies
- the ability to communicate well with colleagues, supervisors and a wide variety of postal customers
- manual dexterity
- a good memory.

They should enjoy having clear guidelines and organized methods for their work, handling mail and talking to people.

Educational Requirements

Postal clerks are trained on the job. When seeking employment, a high school diploma and experience serving the public are definite assets. Applicants for Canada Post positions must:

- have recent physical work experience
- have good references
- pass a series of practical and oral tests.

Employment and Advancement

(section revised JANUARY 2006)

Postal clerks are employed throughout Alberta in postal outlets that are operated by Canada Post or by contractors to Canada Post.

Competition for Canada Post positions is keen and there are rigorous screening procedures for job applicants. Nearly one in three jobs is part-time. Prospective Canada Post employees in major urban centres are hired as temporary employees who are on call. At first, they may work only a few days a month. More than three years of seniority are usually required to become permanent employees and several more years are required to move into wicket positions.

Postal clerks employed by Canada Post are members of the Canadian Union of Postal Workers (CUPW). Postal clerks employed by contractors who operate retail store postal outlets may not be represented by unions.

Many postal clerks stay in the occupation until they retire. Without further education, advancement opportunities for postal clerks are limited.

Postal clerks are part of the larger National Occupational Classification 1461: Mail, Postal and Related Clerks. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Transportation and Warehousing**
- **Information, Culture and Recreation**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

About 4,250 Albertans are employed in the Mail, Postal and Related Clerks occupational group which is expected to grow up to 1.0 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover. (**Note**: Since postal clerks form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for postal clerks.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Wages and benefit packages vary considerably from one employer to another.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Mail, Postal and Related Clerks occupational group working part-time or full-time earned from **$12,500 to $28,500 a year.** The average salary was **$17,100 a year.**

Hourly wages for postal clerks employed by Canada Post range from **$20.55 to $21.28 an hour (2005 figures)**.

Other Sources of Information

Canada Post website: www.canadapost.ca

Canadian Union of Postal Workers (CUPW) website: www.cupw-sttp.org

Related Occupational Profiles

Letter Carrier
Mail Sorter
Retail Salesperson

Related High School Subjects

Language Arts; and Physical Education

Related Post-Secondary Fields of Study

Personal and Food Services

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Power Engineer

Produced JULY 2005

Power engineers supervise, operate and maintain machinery and boilers that provide power, heat, refrigeration and other utility services to heavy industry and large building complexes.

NOC Number(s): 7351
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **O i m**

Duties

Power engineers are responsible for the safe and efficient operation and maintenance of industrial equipment such as boilers, steam and gas turbines, generators, gas and diesel internal combustion engines, pumps, condensers, compressors, pressure vessels and related controls. In large industrial or building complexes, they also may be responsible for heating, air-conditioning, ventilation, refrigeration, fire systems and building control systems.

Responsibilities vary from one position to another but, in general, power engineers:

- ensure that safety codes and other applicable regulations are followed
- use automatic or manual controls to start, operate and shutdown plant systems
- monitor alarms, gauges and other instruments associated with plant operations
- trouble shoot and take corrective action to prevent equipment or system failures
- isolate equipment mechanically and electrically for inspection and repair
- ensure that equipment and processes operate at maximum efficiency
- assist in the development of operation, maintenance and safety procedures
- maintain a daily log of operation, maintenance and safety activities
- investigate and report on safety-related accidents or incidents
- write reports about plant operation
- work with outside agencies, consultants and contractors.

Industrial plants and building operations often are automated to enhance production efficiency and improve safety. In more modern plants, senior power engineers may work in control room environments, analyzing problems and taking action to ensure continuous and reliable operation of equipment and systems. At times, they must switch from automatic controls to manual controls to correct problems and ensure the safety of staff and equipment.

Working Conditions

Working conditions vary considerably in this occupation. Power engineers may be exposed to high noise levels, high temperatures, high humidity, all types of outdoor weather conditions, dust, grease, hazardous chemicals or unpleasant odours. For example, those working in a coal-fired power generating station are exposed to coal dust and fly ash. In large plants, power engineers may be required to enter confined spaces or inspect equipment located at extreme heights. Lifting items that weigh up to 25 kilograms may be an occasional or regular part of their work. Safety precautions and procedures must be observed to reduce the risk of injury.

Power engineers often work shifts, weekends, holidays and emergency overtime to accommodate continuous production.

Personal Characteristics

Power engineers need the following characteristics:

- mechanical and electrical aptitude
- good vision, hearing, manual dexterity and eye-hand co-ordination
- good communication skills in person and in writing
- good organizational and decision-making skills

- the ability to work well with others in a team environment.

Power engineers should enjoy controlling and operating manual and automated systems, analyzing information and solving problems, and having clear rules and organized methods for their work.

Educational Requirements

In Alberta, power engineers are **certified through the Alberta Boilers Safety Association**. Certification examinations are standardized and accepted in all provinces except Quebec.

There are five levels of certification, advancing from Fifth Class certificate to First Class certificate. Each level of certification has different training and employment experience requirements. Completion of an approved course is required to challenge Fourth and Fifth Class Certificate of Competency examinations.

To write the examination for the Third Class certificate, candidates must have:

- the required operating experience with a Fourth Class certificate
- Science 10 or Physics 10, Applied Math 10 or Pure Math 10 (or Math 10 or 13) and English 10 or 13 (or equivalent education) or pass Part A of a recognized Third Class course in power engineering.

To write the examination for the Second Class certificate, candidates must have:

- the required operating experience with a Third Class certificate
- Science 20 or Physics 20, Applied Math 20 or Pure Math 20 (or Math 20 or 23) and English 20 or 23 (or equivalent education) or pass Part A of a recognized Second Class course in power engineering.

To write the examination for the First Class certificate, candidates must have:

- the required operating experience with a Second Class certificate
- Science 30 or Physics 30, Applied Math 20 or Pure Math 20 (or equivalent) and English 20 or 23 (or equivalent), or pass Part A of a First Class course in power engineering.

Power engineering programs and continuing education courses are offered by the following post-secondary institutions in Alberta:

- **Grande Prairie Regional College**
- **Keyano College** in Fort McMurray
- **Lakeland College** in Lloydminster,
- **Lethbridge Community College**
- **Medicine Hat College**
- **Northern Alberta Institute of Technology (NAIT)** in Edmonton and Fairview
- **Northern Lakes College** in Grouard
- **Portage College** in Lac La Biche
- **Red Deer College**
- **Southern Alberta Institute of Technology (SAIT)** in Calgary.

Entrance requirements for entry level power engineering programs vary but generally include Grade 10 or 11 English, math and physics courses. Some programs require a high school diploma or equivalent.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

(section revised JANUARY 2006)

Power engineers may be employed in any industry in which boilers are used. For example, they may be employed in:

- gas plants
- power generating plants
- heavy oil plants
- petrochemical plants
- pulp mills
- plastic plants
- breweries
- food production plants
- refineries

- hospitals
- hotels
- schools and other institutions
- office and apartment complexes.

Competition for entry level positions is keen, especially at the third, fourth and fifth class Power Engineer levels. Advancement to more responsible positions usually requires higher levels of certification. However, higher level certificates do not guarantee promotion.

People who have power engineering certification may be employed in a number of National Occupational Classifications (NOC groups). In Alberta, over 75 per cent of people employed in the classification 7351: Stationary Engineers and Auxiliary Equipment Operators classification work in the following industries:

- **Utilities**
- **Health Care and Social Assistance**
- **Educational Services**
- **Oil and Gas Extraction**
- **Food and Beverage Products Manufacturing**
- **Mineral Products Manufacturing**
- **Public Administration**
- **Management, Administrative and Other Support Services**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 1,950 Albertans are employed in the Stationary Engineers and Auxiliary Equipment Operators occupational group which is expected to grow 1.2 to 2.2 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 20 to 50 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: This forecast does not include job openings created in other NOC classifications that require power engineering certification.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Earnings for power engineers vary according to the level of certificate held, the responsibilities of the position, and the location and size of the employing organization.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Stationary Engineers and Auxilliary Equipment Operators occupational group working part-time or full-time earned from **$21,600 to $78,400 a year.** The average salary was **$57,300 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Boilers Safety Association (ABSA) website: www.absa.ca

Related Occupational Profiles

Building Operator
Gas Plant Operator
Safety Codes Officer

Related High School Subjects

Design Studies; Electro-Technologies; Energy and Mines; Information Processing; Language Arts; Mathematics; Mechanics; Physical Education; and Science (Physics)

Related Post-Secondary Fields of Study

Trades, Industrial and Related Training

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Power Lineman

Apprenticeship and Industry Training

Produced FEBRUARY 2006

Power linemen construct, maintain and repair overhead and underground electrical power transmission and distribution systems.

NOC Number(s): 7244
Minimum Education: Apprenticeship Trade
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: O i m

Duties

Duties vary from one position to another but, in general, power linemen:

- erect and maintain steel, wood or concrete poles, towers and guy wires
- install, maintain and repair overhead and underground power lines and cables, insulators, conductors, lightning arrestors, switches, transformers, street lighting and other associated equipment
- splice, solder and insulate conductors and related wiring to connect power distribution and transmission networks.

When there is a power disturbance, failure or storm damage, power linemen locate the source of the problem and replace or repair defective power lines and accessories. They use wiring diagrams, voltage indicating devices and other electrical-testing instruments to identify defective automatic sectionalizing devices, circuit breakers, fuses, voltage regulators, transformers, switches, relays or wiring.

Working Conditions

Power linemen work outdoors and travel to various work sites. The work may be strenuous and require frequent heavy lifting, carrying and reaching. Getting to power lines may require climbing poles or towers, working from a bucket attached to an aerial lift boom or entering manholes and underground vaults.

Although a 40-hour work week is normal, linemen may be called upon at any hour and in any weather to respond to emergency situations. Shift work may also be required.

There is some risk of injury due to falls and electrical shocks. Special equipment and training in safe work practices and procedures help reduce the risk of injury when working with energized power lines. (Power lines may be de-energized and grounded or they may remain energized while power linemen are working.)

Power lineman may be required to lift items weighing over 25 kilograms.

Personal Characteristics

Power linemen need the following characteristics:

- physical strength and stamina
- good physical co-ordination and manual dexterity
- mechanical ability
- good hearing and colour vision
- the ability to work in high places and extreme conditions
- the ability to work as a member of a team and adapt to changing tasks and locations
- the ability to keep up to date with changing technology.

They should enjoy working outdoors in all types of weather.

Educational Requirements

To work in Alberta, power linemen must be ONE of the following:

- registered apprentices
- certified journeymen
- working for an employer who is satisfied that they have the skills and knowledge expected of certified journeymen
- self-employed.

To **register** with **Alberta Apprenticeship and Industry Training**, apprentices must:

- have at least Alberta Math 20 or 23, Pure Math 20 or Applied Math 20 (or equivalent) or pass an entrance exam
- find a suitable employer who is willing to hire and train an apprentice. Most employers prefer to hire high school graduates and may select apprentices from among their current employees.

The **term of apprenticeship** is four years (four 12-month periods) that include a minimum of 1,525 hours of on-the-job training and seven weeks of technical training in each of first three years and a minimum of 1,800 hours of on-the-job training in the fourth. High school students can become apprentices and gain credits toward apprenticeship training and a high school diploma at the same time through the Registered Apprenticeship Program (RAP).

Applicants who have related training or work experience may be eligible for credit or certification.

Power lineman apprentices may attempt the Interprovincial Exam in the final period of their apprenticeship training and, if successful, are granted a Red Seal (which is recognized in most parts of Canada).

Technical training is arranged by Alberta Apprenticeship and Industry Training and is currently offered at the Northern Alberta Institute of Technology (NAIT) in Edmonton.

Pre-employment programs for prospective apprentices and continuing education programs for journeymen may be offered on an as needed basis by the institution(s) listed above or other schools.

Employment and Advancement

Power linemen are employed by utility companies and their contractors. In some companies, power linemen must be union members.

Experienced power linemen may advance to foreman or line supervisor positions. Alberta certified journeyman power linemen who have the supervisory or management skills required by industry may apply for an Achievement in Business Competencies Blue Seal by contacting Alberta Apprenticeship and Industry Training.

Power linemen are part of the larger National Occupational Classification 7244: Electrical Power Line and Cable Workers. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Utilities**
- **Construction**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 1,650 Albertans are employed in the Electrical Power Line and Cable Workers occupational group which is expected to grow 1.8 to 2.8 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 20 to 50 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since power linemen form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for power linemen.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Apprentice power linemen earn a minimum of 50 per cent of the journeyman wage rate in their shop in the first year, 60 per cent in the second, 67.5 per cent in the third and 75 per cent in the fourth. According to the Alberta Provincial Apprenticeship Committee for this trade, journeyman wage rates vary, but generally range from **$25 to $32 an hour plus benefits** (2005 estimate).

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Electrical Power Line and Cable Workers occupational group working part-time or full-time earned from **$26,700 to $95,200 a year.** The average salary was **$50,900 a year.**

Other Sources of Information

Alberta Apprenticeship and Industry Training website: www.tradesecrets.org

Alberta Construction Industry "Trade Up!" website: www.careersconstruction.com

Calgary Construction Association website: www.cca.cc

Construction Sector Council website: www.csc-ca.org

Related Occupational Profiles

Communication Technician
Crane and Hoisting Equipment Operator
Electrician
Power System Electrician

Related High School Subjects

Electro-Technologies; Mathematics; and Physical Education

Related Post-Secondary Fields of Study

Trades, Industrial and Related Training

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Power System Electrician

Apprenticeship and Industry Training

Produced FEBRUARY 2006

Power system electricians install, maintain and repair electrical power generation, transmission and distribution systems and equipment.

NOC Number(s): 7243
Minimum Education: Apprenticeship Trade
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: **O i m**

Duties

In general, power system electricians work in two distinct areas: substations and metering.

Substations
Power system electricians in substation areas work with high voltage equipment such as:

- circuit-breakers
- transformers
- switches
- control circuits for protection, indication and monitoring systems.

Their daily work involves adjusting relays, working on safety devices, and general maintenance of large switch gear.

Metering
Power system electricians in metering areas work with a variety of recording devices such as:

- supervisory controls
- indicating and recording devices
- switchboards and equipment circuitry found in generating stations and powerhouses.

When client companies wish to review the way they are billed for power usage, power system electricians may install demand meters. These meters provide data that can help companies determine how to be more cost-effective in their power usage.

Working Conditions

Power system electricians work both indoors and outdoors. Although a 40-hour work week is normal, power system electricians may be on call at designated times or required to respond to emergencies whenever they occur. Shift work may also be required.

Special equipment and training in safe work practices and procedures help reduce the risk of injury when working with live electricity.

Personal Characteristics

Power system electricians need the following characteristics:

- the ability to handle heavy swith gear
- the ability to work with precision instruments to fine tune equipment
- the ability to understand the theoretical background of their work
- the ability to pay careful attention to details
- the ability to keep up to date with changing technology.

They should enjoy thinking of new ways to do things.

Educational Requirements

To work in Alberta, power system electricians must be ONE of the following:

- registered apprentices
- certified journeymen
- working for an employer who is satisfied that they have the skills and knowledge expected of certified journeymen
- self-employed.

To **register** with **Alberta Apprenticeship and Industry Training**, apprentices must:

- have at least Alberta Math 20 or 23, Pure Math 20 or Applied Math 20 (or equivalent) or pass an entrance exam
- find a suitable employer who is willing to hire and train an apprentice. Most employers prefer to hire post-secondary graduates of technical programs, or high school graduates who have good marks in math, physics and drafting.

The **term of apprenticeship** is four years (four 12-month periods) that include a minimum of 1,500 hours of on-the-job training and eight weeks of technical training in the first and second year and a minimum of 1,425 hours of on-the-job training and ten weeks of technical training in the third and fourth. High school students can become apprentices and gain credits toward apprenticeship training and a high school diploma at the same time through the Registered Apprenticeship Program (RAP).

Applicants who have related training or work experience may be eligible for credit or certification.

Technical training is arranged by Alberta Apprenticeship and Industry Training and is currently offered at:

- Keyano College in Fort McMurray at the main campus and by mobile delivery at the Suncor site.
- Lakeland College in Vermilion
- Lethbridge Community College
- Medicine Hat College in Brooks
- the Northern Alberta Institute of Technology (NAIT) in Edmonton and Grande Prairie
- Red Deer College
- the Southern Alberta Institute of Technology (SAIT) in Calgary.

Lakeland College, Lethbridge Community College and NAIT also offer technical training by distance delivery.

Competency-Based Apprenticeship Training (CBAT) is also offered by Lakeland College, Lethbridge Community College, Medicine Hat College, NAIT and Red Deer College.

Pre-employment programs for prospective apprentices and continuing education programs for journeymen may be offered on an as needed basis by the institution(s) listed above or other schools.

Employment and Advancement

Power system electricians are employed by utility companies, large industrial facilitites, and their subcontractors.

Experienced power system electricians may advance to supervisory positions such as foreman or electric services superintendent. Alberta certified journeyman power system electricians who have the supervisory or management skills required by industry may apply for an Achievement in Business Competencies Blue Seal by contacting Alberta Apprenticeship and Industry Training.

In Alberta, over 75 per cent of people employed as power system electricians work in the following industries:

- **Utilities**
- **Construction**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 450 Albertans are employed in the Power System Electricians occupational group which is expected to grow 2.1 to 3.1 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Apprentice power system electricians earn at least 50 per cent of the journeyman wage rate in their place of employment in the first year, 60 per cent in the second, 67.5 per cent in the third and 75 per cent in the fourth. According to the Alberta Provincial Apprenticeship Committee for this trade, journeyman wage rates vary, but generally range from **$25 to $35 an hour plus benefits** (2005 estimate).

According to the **2005 Alberta Wage and Salary Survey**, Albertans working part-time or full-time in the Power System Electricians occupational group earned **up to $71,800 a year.** The average salary was **$67,700 a year**.

Other Sources of Information

Alberta Apprenticeship and Industry Training website: www.tradesecrets.org

Construction Sector Council website: www.csc-ca.org

Related Occupational Profiles

Canadian Forces Personnel - Non Commissioned
Communication Technician
Electrical Motor Systems Technician
Electrician
Power Lineman
Safety Officer

Related High School Subjects

Design Studies; Electro-Technologies; Mathematics; Physical Education; and Science (Physics)

Related Post-Secondary Fields of Study

Trades, Industrial and Related Training

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Pre-Press Technician

Produced DECEMBER 2005

Pre-press technicians use computer software and computer-controlled machines and equipment to generate and combine text, graphics and other visual elements to prepare copy for printing.

NOC Number(s): 9472.5
Minimum Education: High school diploma
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **O M I**

Duties

After authors write the text and artists or graphic designers translate ideas into images, publishing materials such as books, magazines and pamphlets involves the following three stages:

- The pre-press stage includes the assembly of design elements such as illustrations and text on a page, photography, scanning, imposition, film assembly, proof-reading and the transfer of images to printing press plates or digital printers.
- The press stage involves using digital printers or printing presses to produce single to full colour copies.
- The binding and finishing stage includes folding, cutting, collating and binding large sheets of paper in various ways and packaging for delivery.

This profile describes work done in the pre-press stage. For information about work performed in other publication stages, see the Digital Printing Machine Operator, Printing Press Operator and Binding and Finishing Machine Operators occupational profiles.

Most printers use computer systems to enter text, format it, add graphics and create a layout design, all in one operation. In general, **electronic (desktop/digital) publishing specialists:**

- discuss requirements and specifications with the producers of information to be published
- use computer software to prepare sample layouts for approval
- key in textual material according to specifications for typeface, point size, column width, line justification, depth of copy on page, headings, location of columns, page numbering, table of contents and indexing
- spell-check copy and correct errors
- use page-layout software to format and place text and pictures on the page
- combine, convert and prepare various types of digital files for printing
- produce final copies according to design specifications
- store copies of publications on paper, film or electronic storage media.

In process colour printing, visible colours in art work or photographs must be colour separated to create printing plates or cylinders. The nature of the plate or cylinder will depend on the type of printing press to be used. Lithographic or planographic processes require plates that have image and non-image areas on the same plane, separated by chemical interaction. Computer systems or CTP devices are often used to transfer digital images directly onto lithographic plates or directly to a specially equipped printing press. Newer digital presses don't use printing plates; they produce images directly from electronic files.

In addition to desktop/digital publishing systems, pre-press technicians may use scanners or more traditional processes to prepare images for printing:

- **Scanner operators** use flatbed or drum scanning equipment to capture images digitally. The original photograph or slide is scanned to create a digital image that can be manipulated using colour correction software. Scanner operators ensure that each image is colour corrected and has the correct tone reproduction curves for the printing process.
- **Film assemblers** assemble pieces of film (negatives or positives) into final pages which are assembled into imposed printing layouts. These assembled layouts or flats are used to make conventional proofs and, once approved, printing plates.

- **Platemakers** take approved flats of assembled positives and negatives, and position them onto a printing plate. They expose, process and quality approve the plate before sending it to press operators.

When necessary, pre-press technicians may modify film or computer files to produce the best possible print results. They must understand the entire production process to make appropriate decisions.

Working Conditions

Working conditions vary. In large companies, pre-press technicians may work in specialized departments such as a desktop publishing department or a scanning department. Most printing companies employ eight to ten people and have one pre-press area for all pre-press operations. These shops are usually located in industrial bays.

Shift work may be required and overtime is often required to meet print deadlines.

Personal Characteristics

Pre-press technicians need the following characteristics:

- accurate colour perception
- full body mobility and good hand/eye co-ordination
- the ability to pay careful attention to details
- the ability to work under the pressure of deadlines
- tact and discretion when dealing with customers' material
- a willingness to keep up to date with changing hardware and software technology.

They should enjoy having clear rules and guidelines for their work, operating computers and related equipment, and experimenting with document layouts.

Educational Requirements

(section revised FEBRUARY 2006)

Many pre-press technicians have learned on the job but technological advances are making this increasingly difficult. Related computer skills are essential for new entrants into this field. Employers generally prefer to hire applicants who have related training or experience.

In Alberta, many post-secondary institutions offer visual communications and graphic design programs. For a list, see the Graphic Designer occupational profile. The following institutions offer programs directly related to publishing or digital design:

- **Grant MacEwan College** in Edmonton offers a one year Design Foundations program. The entrance requirement is a high school diploma with English Language Arts 30-1 (or equivalent). Graduates may go on to take a two year Design Studies diploma program with a specialization in design and digital media.
- **Mount Royal College** in Calgary offers a 210 hour Publishing certificate program through Continuing Education. Applicants must be at least 18 years of age.
- **NorQuest College** in Edmonton offers a 20 week Press and Bindery Operator program. The entrance requirement is Grade 10 English and math. Graduates of this program may transfer credit toward the SAIT diploma program.
- The **Northern Alberta Institute of Technology (NAIT)** in Edmonton offers a one year Graphic Communications certificate program that focuses on pre-press skills in Mac and PC environments including elements of film assembly and reproduction photography. The entrance requirement is Grade 11 with English and at least 60 per cent in Math 20 or 23, but admission to this program is competitive so higher marks in Grade 12 subjects may be required. Art, drafting, photography or computer experience is an asset. Students are expected to have, or to acquire during the program, a minimum keyboarding speed of 50 words per minute.
- The **Southern Alberta Institute of Technology (SAIT)** in Calgary offers a two year Digital Graphics Communications diploma program. The entrance requirement is a high school diploma with English Language Arts 30-1 or 30-2 (or English 30 or 33).

Continuing education programs are often offered on an as needed basis. Before enrolling in any program, prospective students should discuss the suitability of the program with potential employers.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

(section revised JANUARY 2006)

Pre-press technicians are employed by:

- daily and weekly newspapers
- commercial printers
- large corporations
- advertising agencies and publishers
- trade shops that specialize in pre-press work and subcontract to other printers.

Some desktop publishing specialists are self-employed and contract out their services.

Increasing use of digital cameras has decreased the need for scanner operators. However, it has increased the need for people skilled in colour correction and image manipulation.

Experienced pre-press technicians may become customer service representatives, estimators (who quote prices for customers), production controllers or production managers, or move into marketing and sales.

Pre-press technicians are part of the larger National Occupational Classification 9472: Camera, Platemaking and Other Pre-Press Occupations. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Other Manufacturing**
- **Information, Culture and Recreation**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 250 Albertans are employed in the Camera, Platemaking and Other Pre-Press Occupations group which is expected to grow 1.0 to 2.0 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Camera, Platemaking and Other Pre-Press Occupations group working part-time or full-time earned from **$16,100 to $64,500 a year.** The average salary was **$37,800 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Northern Alberta Printers Association (NAPA) website: www.albertaprinters.com

Printing and Graphics Industries Association of Alberta (PGIA) website: www.pgia.ca

Related Occupational Profiles

Binding and Finishing Machine Operators
Digital Printing Machine Operator
Graphic Designer
Printing Press Operator
Word Processing Operator

Related High School Subjects

Communication Technology; Design Studies; Fine Arts (Visual Arts); Information Processing; Language Arts; and Mathematics

Related Post-Secondary Fields of Study

Communications

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Printing Press Operator

Produced DECEMBER 2005

Printing press operators set up and operate sheet and web-fed presses that print single or multiple colours on paper.

NOC Number(s): 7381
Minimum Education: High school diploma
Employment Outlook: Employment turnover plus below average occupational growth in Alberta
Interests: **M O d**

Duties

Printing presses range from small one-man, sheet-fed lithographic presses to very large web offset presses that require several operators. Their duties and responsibilities vary depending on the type of press but, in general, press operators:

- review job orders to determine production time, colour sequence, quantities required and other paper and ink specifications
- load paper (which requires an understanding of the climatization of the paper and the effects of curl on the usability of the stock)
- install and adjust plates
- load and mix ink colours
- prepare ink fountains and feeder units
- adjust settings to control colour and consistency of reproduction
- set up the press and check samples for ink coverage and density, alignment and registration
- monitor quality consistency during production runs and make adjustments as necessary
- remove and clean plates after a press run
- perform press and feeder maintenance functions.

Different problems can arise during a run depending on the type of plates, paper, ink and chemicals used, and the humidity and temperature in the press room. Press operators must keep presses running to capacity and, at the same time, ensure that ink and chemicals are in proper balance and reproduction meets quality standards.

Working Conditions

Printing press operators usually work in climate controlled press rooms. Shift work is often required and working overtime to meet print deadlines is common.

Printing press operators often stand for long periods and do a considerable amount of bending and reaching. They frequently lift paper, ink rollers and other items weighing up to 10 kilograms. Working with machinery can be noisy and involves some risk of injury.

Personal Characteristics

Printing press operators need the following characteristics:

- good vision and accurate colour perception
- good hand/eye co-ordination
- average hearing
- mechanical ability
- the ability to stand for long periods
- the ability to pay careful attention to details
- flexibility and an interest in learning new technologies
- the ability to work under the pressure of deadlines
- good oral and written communication skills.

They should enjoy taking a methodical approach to their work, setting up and adjusting presses, and working in a team environment.

Educational Requirements

Printing press operators generally acquire their skills by learning on the job. Printing and publishing is an evolving industry and they must be prepared to handle change by learning new skills.

There are no standard education requirements for printing press operators. Employers generally prefer to hire high school graduates who have experience operating machines or equipment.

In Alberta, the following post-secondary institutions offer related education programs:

- **NorQuest College** in Edmonton offers a 20 week Press and Bindery Operator program. The entrance requirement is Grade 10 English and math. Graduates of this program may transfer credit toward the SAIT diploma program.
- The **Southern Alberta Institute of Technology (SAIT)** in Calgary offers a two year Digital Graphics Communications diploma program. The entrance requirement is a high school diploma with English Language Arts 30-1 or 30-2 (or English 30 or 33).

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

(section revised JANUARY 2006)

Printing press operators are employed by:

- newspaper publishers
- magazine publishers
- commercial printers
- large corporations that have in-house printing facilities.

Where operating large presses requires a press crew, experienced operators may advance to lead hand, foreman, plant manager or other supervisory positions.

In Alberta, over 75 per cent of people employed as printing press operators work in the **Other Manufacturing** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Other Manufacturing industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 1,850 Albertans are employed in the Printing Press Operators occupational group which is expected to grow up to 0.5 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Printing Press Operators occupational group working part-time or full-time earned from **$20,400 to $72,100 a year.** The average salary was **$43,700 a year.**

Top salaries for printing press operators range up to $35 an hour (2005 estimate).

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Northern Alberta Printers Association (NAPA) website: www.albertaprinters.com

Printing and Graphics Industries Association of Alberta (PGIA) website: www.pgia.ca

Related Occupational Profiles

Binding and Finishing Machine Operators
Digital Printing Machine Operator
Painter/Printmaker
Pre-Press Technician

Related High School Subjects

Communication Technology; Information Processing; Language Arts; Mathematics; and Physical Education

Related Post-Secondary Fields of Study

Communications; and Trades, Industrial and Related Training

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Private Investigator

Produced APRIL 2003

Private investigators gather information and conduct surveillance to secure evidence relating to a wide range of private, corporate and legal interests.

NOC Number(s): 6465.2
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **M I S**

Duties

Private investigators may:

- investigate and work to prevent loss caused by theft or fraud within corporations and businesses
- observe disability insurance claimants to see if they are working at another job while they are claiming disability, or to see if their activities are consistent with the claimed disability
- conduct searches for missing persons
- gather information for lawyers about defendants or witnesses in criminal and civil court cases
- gather material or evidence for individuals in divorce or child custody cases
- conduct pre-employment checks
- work with law enforcement agencies to investigate corporate/insurance crimes.

To gather the information and evidence they need, private investigators may:

- contact law enforcement agencies
- interview employers, friends, relatives and other sources
- take photographs and videotape events
- locate witnesses and obtain statements from them
- search through public records
- keep individuals under surveillance.

Working Conditions

No two assignments are ever the same. However, long hours and hard work are almost always involved. Much of the work is routine.

Personal Characteristics

Private investigators need the following characteristics:

- personal integrity
- physical fitness
- tact and good communication skills
- mental alertness and a good memory
- an inquiring mind
- a determination to investigate each problem in detail.

They should enjoy having work responsibilities that change frequently, taking a methodical approach to compiling information, finding innovative approaches to locating people, and working with people.

Educational Requirements

(section revised JUNE 2005)

Private investigators must be licensed by Alberta Justice or employed by a licensed agency. They must be at least 18 years of age. Some agencies require investigators to hold valid first aid and CPR certificates, have a valid driver's licence and provide their own mode of transportation.

Some related experience or education is a definite asset when seeking employment. Many agencies provide additional training programs for new employees.

In Alberta, the following post-secondary institutions offer investigation programs:

- **Bow Valley College** in Calgary offers a 39-hour Private Investigator certificate program. There are no specified admission requirements. Bow College College also offers a six course Private Investigation and Security certificate (part-time). The entrance requirement is the Introduction to Private Investigation program.
- **CDI College of Business, Technology and Health Care** in Calgary and Edmonton offers a 42-week Policing and Protection Services program.
- **Grant MacEwan College** in Edmonton offers a two year Police and Security diploma program with a specialization in Investigations and Security Management. The entrance requirement is a high school diploma or equivalent with at least 65 per cent in English 30 (or at least 75 per cent in English 33 or a skills assessment). A criminal record check and fitness test are required.
- **Mount Royal College** in Calgary offers a five course (90 hours) Investigation certificate program through Continuing Education. Applicants must be 18 years of age or older.
- **NorQuest College** in Edmonton offers a 40-week Aboriginal Policing and Security certificate program. Applicants must be at least 19 years old and have successfully completed a Grade 10 English and Math or equivalent. A valid driver's licence, fitness assessment and medical exam are also required.

For information about criminology and justice programs, see the Police Officer profile.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

(section revised JANUARY 2006)

Private investigators are employed by investigation companies and security agencies. Some start their own agencies.

To open a private investigation agency, Alberta Justice requires that the applicant:

- obtain a $5,000 surety bond
- provide proof of liability and error and ommissions insurance
- be at least 18 years of age
- be a resident of the province
- have no criminal record
- give a sworn affidavit
- have fingerprints taken by the local police.

There is a $500 licensing fee for an agency and a $50 licensing fee for individuals.

Advancement opportunities are limited.

Private investigators are part of the larger National Occupational Classification 6465: Other Protective Service Occupations. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Management, Administrative and Other Support Services**
- **Public Administration**
- **Retail Trade**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation**.

Over 700 Albertans are employed in the Other Protective Service Occupations group which is expected to grow 1.7 to 2.7 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 10 to 20 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since private investigators form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for private investigators.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Private investigators are usually paid a commission according to the fee paid by the client. Earnings vary enormously depending on experience.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Other Protective Service Occupations occupational group working part-time or full-time earned an average salary of **$43,900 a year**.

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

Alberta Association of Private Investigators website: www.alberta-investigators.org

Related Occupational Profiles

Bylaw Enforcement Officer
Canadian Forces Personnel - Non Commissioned
Correctional Officer
Forensic Laboratory Analyst
Insurance Adjuster
Police Officer
Security Guard

Related High School Subjects

Community Health; Language Arts; Legal Studies; and Physical Education

Related Post-Secondary Fields of Study

Social, Community and Protective Services

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Private Trainer/Facilitator

Produced NOVEMBER 2005

Private trainers and facilitators conduct workshops, seminars, retreats, conference sessions and individual coaching sessions for young people and adults. They also may develop, design and evaluate training programs, curricula and materials.

NOC Number(s): 1121
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **I M S**

Duties

Private trainers/facilitators may be hired on a contract basis to improve the performance and productivity of employees in an organization, or they may offer workshops directly to employers/employees or the general public. They use a variety of instructional techniques and formats such as group discussions, role playing, simulations, team exercises, videos and lectures to:

- develop new skills and competencies
- foster an attitude of interest and acceptance
- enhance self-esteem and personal development and growth
- establish healthy working relationships
- promote improved team work.

Private trainers/facilitators usually negotiate contracts with clients that include fees and expenses. Depending on the nature of a contract, trainers or facilitators may be responsible for:

- determining client needs by analyzing existing information or through meetings, surveys, interviews with employees, focus groups or questionnaires
- negotiating and specifying desired training outcomes
- consulting with clients to determine the best way to implement new training programs
- designing training programs or using existing training packages
- designing communication plans for training programs
- developing course materials such as participant handouts and visual materials
- booking videos and co-ordinating group exercises and training instruments
- arranging the duplication of materials for participants
- evaluating training outcomes and preparing summary reports
- calculating or helping clients to calculate the return on investment (financial cost/benefit) of programs.

Private trainers/facilitators must spend a considerable amount of time reading current journals, magazine articles and books to keep up to date.

Working Conditions

Private trainers/facilitators work in settings such as hotel conference rooms, corporate boardrooms, college classrooms, retreat centres, government training rooms, community centres, hospital training facilities, computer labs and home offices. They may work regular business hours or offer evening and weekend training sessions. Preparation and design work may be done in the evening or while travelling.

Personal Characteristics

Private trainers/facilitators need the following characteristics:

- energetic, effective public speaker who can clearly present information in a way that is interesting, practical and appropriate for client learning styles

- flexible, respectful and patient in dealing with others
- willing to take risks and be creative
- well organized.

They should enjoy:

- independence and variety in their work
- helping others and facilitating personal and professional growth
- being innovative
- being recognized as experts in their fields
- managing their own businesses.

Educational Requirements

With the growing complexity of human resource training programs, a bachelor's degree or professional designation plus experience in adult education is rapidly becoming the minimum requirement for private trainers/facilitators. They must:

- understand the needs and characteristics of adult learners
- be skilled at interpersonal communications, leading group discussions and resolving group conflicts
- know how to use instructional aids and equipment (flipcharts, multimedia projectors, video players, presentation hardware and software)
- have computer skills for preparing training materials, using e-learning methods and locating clients.

Trainers also must have expertise that is in demand. For example, they may be be experts in management development, fostering quality service or creativity, managing change or other areas of personal development.

Although there are many private trainers/facilitators who do not have a university education, it can be difficult for those who do not have post-secondary education to break into the training field. Many private trainers/facilitators have a master's degree plus several years of experience in their fields as well as group facilitation experience.

A bachelor's degree in human resources, adult education or a business-related field would provide a good background for those entering this field. Universities and colleges located throughout the province offer a number of suitable degree programs. (For more information, see the Human Resources Professional and College, Technical or Vocational Instructor occupational profiles.)

In general, admission requirements for bachelor's degree programs include a high school diploma or equivalent with a competitive average of at least 60 per cent (70 per cent for some programs) in English Language Arts 30-1 (or English 30) and four other Grade 12 subjects selected from approved lists.

For information about specific programs and requirements, please check post-secondary calendars or websites.

Employment and Advancement

(section revised JANUARY 2006)

Private trainers/facilitators are self-employed and therefore work in a wide variety of settings. Their contracts may vary from half-day sessions to long-term contracts six months to a year in length. Some work primarily for large organizations or post-secondary institutions, teaching a series of programs or seminars.

Private trainers/facilitators may be hired on contract to:

- teach short seminars or full-term courses for colleges, universities and technical institutes (usually offered through continuing education departments)
- conduct workshops for small businesses
- make presentations at professional association meetings, conferences, retreats or symposiums
- custom-design training programs to meet the specific needs of a client
- conduct needs analyses and follow-up evaluations of training sessions
- present short professional development sessions to staff members
- provide in-house training for government employees.

With increasing business competition, developing a productive labour force has become a major concern for most organizations. The need to train employees in areas such as organizational change, strategic planning, creative problem solving and conflict resolution has created growth in the training field.

Private trainers/facilitators are part of the larger National Occupational Classification 1121: Specialists in Human Resources. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Public Administration**

- **Repair, Maintenance, Personal and Other Services**
- **Professional and Technical Services**
- **Oil and Gas Extraction**
- **Finance, Insurance and Real Estate**
- **Management, Administrative and Other Support Services**
- **Health Care and Social Assistance**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation**.

Over 6,350 Albertans are employed in the Specialists in Human Resources occupational group which is expected to grow 1.5 to 2.5 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 90 to 160 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since private trainers and facilitators form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for private trainers and facilitators.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Incomes in this field vary considerably from one person to another and from one year to another. Private trainers usually charge a set fee per day or per contract (contracts may include content development as well as teaching). Often, preparation time is included in negotiated fees because it is not paid directly.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Specialists in Human Resources occupational group working part-time or full-time earned from **$22,300 to $110,000 a year.** The average salary was **$76,700 a year.**

Other Sources of Information

Canadian Association of Professional Speakers (CAPS) website: www.canadianspeakers.org

CAPS Edmonton Chapter website: www.ecn.ab.ca/capsedm

Canadian Society for Training and Development (CSTD) website: www.cstd.ca

Related Occupational Profiles

Career and Technology Studies Teacher
Career Development Professional
College, Technical or Vocational Instructor
Driving Instructor
English as a Second Language Teacher - Adults
Environmental Education Specialist
Mediator
Secondary School Teacher

Related High School Subjects

Communication Technology; Enterprise and Innovation; Financial Management; Information Processing; Language Arts; Management and Marketing; Mathematics; Science; and Social Studies

Related Post-Secondary Fields of Study

Business, Management and Administrative Studies; Communications; Education and Library Studies; Human Ecology, Fashion and Food Sciences; Social Sciences, Law and Religious Studies; and Social, Community and Protective Services

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Producer - Film, Radio, Television and Theatre

Produced MAY 2003

Producers co-ordinate the making of films, theatre productions, television and radio programs including everything from the initial concept to final production and distribution.

NOC Number(s): 5131.1
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **I D S**

Duties

No two projects are exactly the same but, in general, producers:

- initiate the idea for a film, theatre production or radio/television program
- obtain the rights to a script, if necessary
- find financial backing for the venture
- hire key senior staff including directors, writers and production crew
- oversee budgets, schedules and plans
- co-ordinate the day-to-day production off and on the set or stage
- see that all post-production is completed
- negotiate with distributors and broadcasters
- promote the film, production or program.

Producers usually work closely with directors and production managers in hiring actors and production crew members. They deal with contract negotiations over salary and conditions of employment, and must be familiar with minimum wages and working conditions established by relevant unions and associations. Each department's costs must be approved by the producer, from lighting equipment to travel budgets.

Distribution is an important concern for producers. Advance press materials are often sent out before the show is completed or opens on stage. Often a short promotional version or clip is sent out for preview. Producers must then do follow-up calls and sometimes participate in promotional tours and media interviews.

Once a show is running or released, producers:

- wrap up all of the elements related to the project
- pay back any investors
- distribute residual payments to artists
- administer the business concerns of the project.

Film producers may produce commercials, TV programs, industrial training or promotional films, music videos or documentaries. Sometimes film producers write and submit proposals to bid on certain projects to win a contract.

Radio producers are usually assigned a specific show. For example, a producer may be in charge of a local morning show or an afternoon talk show. In general, they:

- determine the program content (within station guidelines)
- supervise the researchers, writers and production assistants
- ensure expenditures do not exceed a set budget.

Radio producers may also work in the control room, directing the music and information portion of the program.

Television producers are responsible for the conception, direction, production and completion of television programs within budget limitations. At larger operations, producers may specialize in news, entertainment or commercials. At smaller stations, they may assume responsibility for several programs. Producers may have some input into hiring on-air staff.

Theatrical producers co-ordinate the production of live plays and musicals. The producer's office must book venues for the play, sometimes in more than one city. Dinner theatres have theatrical producers who produce shows strictly as commercial properties.

Working Conditions

Producers work long, irregular hours. Large projects may take two or more years to complete or involve considerable travel.

Personal Characteristics

Producers working in radio, television, film or theatre need the following characteristics:

- strong leadership and communication skills
- the ability to work with a wide variety of people
- adaptability
- good judgement for hiring key people
- a passion for the work they do and an entrepreneurial spirit
- the ability to deal with stress
- willingness to be held accountable for all decisions made.

They should enjoy having variety in their work, finding innovative solutions to problems, co-ordinating productions and negotiating with people.

Educational Requirements

Producers need a broad range of background knowledge, including:

- an understanding of what each person does in the creation of a project
- a strong business background
- an understanding of Canada's tax system (to explain to financial backers the tax benefits of investing in a project)
- a good understanding of ever-changing technology.

For this reason, producers come from varied backgrounds.

- **Film producers** may come from inside the film business. In larger centres such as Toronto and Vancouver, executive producers are often lawyers or business people.
- **Radio producers** generally begin as writers, broadcasters, researchers or assistant producers. They usually have a university degree in journalism or liberal arts or a two year diploma in radio and television arts.
- **Television producers** tend to come from within the organization and work their way up through junior production jobs. They may have a university degree in arts, commerce, management or law; some have a two year diploma in radio and television arts.
- **Theatre producers** may have experience in the theatre business or be business people who recognize a successful commercial venture.

Red Deer College offers a one year post-diploma Motion Picture Arts, Advanced Certificate program and a Bachelor of Applied Motion Picture Arts degree program both with a specialization in production. The entrance requirement for both programs is two years of a post-secondary Theatre Studies Program, or equivalent, with a grade point average of at least 2.0/4. The entrance requirement for the Theatre Studies diploma program at Red Deer College is a high school diploma with English 30 or mature student status.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

For information about other degree and diploma programs in broadcasting, radio and television arts, communication arts, theatre arts and journalism, see the Actor, Announcer, Theatre Director, Film Director and Reporter occupational profiles.

For information about related workshops and support groups, contact the following organizations:

- **Calgary Society of Independent Filmmakers**
- **Film and Video Arts Society**
- **National Screen Institute of Canada.**

Employment and Advancement

(section revised JANUARY 2006)

Most **radio producers** are employed by radio broadcast companies.

Television producers are often hired on contract for specific shows, although larger television stations may have several producers on staff as well. It is possible to start as news reporter or production assistant or in entry-level positions in sales or operations and work your way up to a producer's position.

There are very few **theatrical producers** in Canada and most of them are situated in the larger cities.

Some **film and television** companies are successfully producing films and television series in Alberta. Producers may work on documentaries, training films, music videos and commercials as well as television programs and feature films.

Producers of all types are part of the larger National Occupational Classification 5131: Producers, Directors, Choreographers and Related Occupations. In Alberta, most people employed in this classification work in the **Information, Culture and Recreation** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Information, Culture and Recreation industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 1,950 Albertans are employed in the Producers, Directors, Choreographers and Related Occupations group which is expected to grow 1.2 to 2.2 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 20 to 50 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since producers form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for producers.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Incomes for freelance producers, who are hired on contract to produce one specific show or a number of programs, vary considerably from one producer to another and from one year to another.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Producers, Directors, Choreographers and Related Occupations group working part-time or full-time earned from **$16,200 to $108,800 a year.** The average salary was **$46,800 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Calgary Society of Independent Filmmakers website: www.csif.org

Cultural Human Resources Council website: www.culturalhrc.ca

Film and Video Arts Society website: fava.ca

National Screen Institute website: www.nsi-canada.ca

Related Occupational Profiles

Choreographer
Cinematographer
Film Director
Public Relations Representative
Stage Manager
Theatre Director

Related High School Subjects

Communication Technology; Enterprise and Innovation; Fashion Studies; Financial Management; Fine Arts (Drama); Language Arts; Languages (other than English); Logistics; Management and Marketing; Mathematics; and Social Studies

Related Post-Secondary Fields of Study

Business, Management and Administrative Studies; Communications; and Fine Arts and Performing Arts

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For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Professional Athlete

Produced MARCH 2005

Professional athletes compete in sports either individually or as team members at the paid professional level.

NOC Number(s): 5251
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **M d i**

Duties

Through training, perseverance and talent, professional athletes have advanced through the amateur ranks of their sport to become paid professionals. Depending on the sport, they may compete against one opponent (e.g. tennis players) or be members of a team (e.g. hockey, football and baseball players).

Training and competition schedules vary from one sport to another but, in general, professional athletes must:

- practice daily
- be committed to a daily physical and mental training programs
- lead a healthy lifestyle that includes proper nutrition
- travel frequently
- act as ambassadors for their sport.

Working Conditions

The work is both physically and mentally demanding. Some sports require lifting items weighing up to 25 kilograms or more.

Professional athletes often work evenings, weekends and holidays. Employment is generally seasonal and those who play outdoors must cope with variable weather conditions. Some professional athletes are required to relocate quite frequently when they are traded to teams in other cities.

All sports require physical skill but some sports involve greater physical contact than others. Injuries may have permanent effects on physical health and, in some sports, the risk of injury is high.

Personal Characteristics

Professional athletes need the following characteristics:

- exceptional talent in their sport including extraordinary physical fitness, co-ordination, strength, stamina and speed
- exceptional dedication and determination
- honesty
- the ability to think quickly
- the ability to endure public criticism and the physical and emotional pressures of constant competition.

They should enjoy training and competing, taking charge of situations, and analyzing performances to identify weaknesses and strengths.

Educational Requirements

Professional athletes usually start playing their chosen sport at a young age to develop the level of skill required to become professionals.

It is becoming increasingly common for prospective professional athletes to **attend college or university** where they can continue their athletic training, acquire the education necessary for a second occupation and perhaps be scouted by a professional team. However, post-secondary education does not guarantee a job as a professional athlete. Specific paths of entry for the various sports must be followed. This information can be obtained by contacting the appropriate sports league or association.

Employment and Advancement

(section revised JANUARY 2006)

There are very few professional athletes employed in Alberta. The number of years professional athletes are physically able to maintain a high level of play is also limited. For example, the careers of football players last approximately five years. For this reason, aspiring professional athletes are encouraged to prepare for a second occupation.

Professional athletes often find there are various options open to them when they retire from active play. Their training and experience may enable them to stay involved in their sport by becoming coaches, trainers, managers, officials, scouts, athletic directors or sports commentators. Sales and promotional work also are popular fields of employment for retired athletes.

In Alberta, most people employed as athletes work in the **Information, Culture and Recreation** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Information, Culture and Recreation industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 500 Albertans are employed in the Athletes occupational group which is expected to grow 1.5 to 2.5 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover.

Salary

Salaries for professional athletes vary considerably from one sport to another and can be quite high. However, because the time spent as a professional athlete is often short, individuals may earn a relatively high income for a limited number of years.

Other Sources of Information

Canadian Football League website: www.cfl.ca

Canadian Hockey League website: www.chl.ca

Related Occupational Profiles

Coach
Fitness Instructor
Golf Professional
Sports Official

Related High School Subjects

Physical Education

Related Post-Secondary Fields of Study

Physical Education and Recreation

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Property Manager

Produced JANUARY 2006

Property managers oversee the administration, maintenance, operation and improvement of residential, commercial and industrial properties and represent the interests of property owners.

NOC Number(s): 1224
Minimum Education: High school diploma
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **M D s**

Duties

Duties vary somewhat depending on the type of property but, in general, property managers:

- prepare annual management plans for properties
- ensure that properties are properly maintained
- prepare budgets and monthly financial statements
- maintain good tenant-owner relations
- negotiate, prepare and administer leases and other legal agreements
- propose and discuss possible renovations or improvements with property owners and in some cases tenants
- deal with tenant and owner concerns such as parking, heating, maintenance, security, insurance, rent payments and the enforcement of rules, regulations and by-laws
- regularly inspect each property
- obtain quotes or bids from contractors for repairs, renovations or maintenance
- supervise janitorial and security services, building superintendents, building operators, contractors and staff
- ensure that work has been satisfactorily completed and approve invoices
- administer and maintain records of damage and security deposits or condominium fees
- collect rents and serve notices to vacate, or collect condomimium fees
- prepare reports on topics such as energy management and upgrading options
- review rents to ensure they are kept at market value.

Condominium managers regularly report to a condominium board and must act in accordance with the Condominium Property Act and all applicable bylaws.

Working Conditions

Property managers work in an office environment but are often away from the office inspecting properties and monitoring contractors. Their work days tend to be unstructured and they must deal with frequent interruptions. They work normal business hours, although long hours and evening meetings are sometimes required.

Personal Characteristics

Property managers need the following characteristics:

- good communication skills in person and in writing
- the ability to work effectively with a wide variety of people including owners, staff, contractors and tenants
- diplomacy, patience and flexibility
- the ability to negotiate effectively
- good organization and time management skills.

They should enjoy taking a methodical approach to their work, co-ordinating and supervising the work of others, and dealing with people.

Educational Requirements

Most employers prefer to hire property managers who have at least a high school diploma, business experience and computer skills. Graduation from a post-secondary program related to property management, real estate management, accounting or business administration is a definite asset. Most commercial managers have related post-secondary education.

Property managers who show suites, collect rent or prepare and administer leases and other legal documents must be licensed by the **Real Estate Council of Alberta** (RECA). To qualify for licensing, applicants must complete the six-course Real Estate Agents licensing program offered by the **Alberta Real Estate Association** (AREA) and pass a provincial qualifying exam.

The **Building Owners and Managers Association** (BOMA), the **Real Estate Institute of Canada** (REIC), the **Institute of Real Estate Management** (IREM) and the **International Facility Management Association** (IFMA) have developed a Property Management 1000 course that is recognized by RECA for property managers seeking their real estate agent's license. The Property Management 1000 course is offered by the **Real Estate Training Institute** in Edmonton and the Faculty of Continuing Education and Extension at **Mount Royal College** in Calgary. The entrance requirement is a high school diploma or equivalent. For current information about the course and mature student admission policies, please check institution calendars or websites.

Other Requirements

Certification is voluntary in Alberta.

The Real Estate Institute of Canada offers a Certified Property Manager (CPM) designation. To qualify for the CPM designation, a property manager must:

- have at least five years of experience as a property manager including one year under the supervision of a CPM (10 years of experience is required if the manager does not have a university degree)
- successfully complete specified university level and Real Estate Institute courses
- complete a long range management plan
- work full-time in real estate management.

The Building Owners and Managers Association (BOMA) offers a Real Property Administrator (RPA) designation. To qualify for the RPA designation, property managers must successfully complete eight designated courses covering a wide range of topics related to property management. Some of these courses can be taken at the University of Alberta in Edmonton, the University of Calgary, Mount Royal College in Calgary, or through home study.

The Canadian Condominium Institute offers a Professional Associate (ACCI) designation.

Employment and Advancement

Property managers are employed by:

- governments
- corporations (including condominium corporations)
- individual owners
- property management firms that manage properties such as shopping malls, warehouses, office towers, condominiums and other residential buildings.

Some property managers work on a contract basis and charge property owners on a fee-for-service basis.

Advancement opportunities depend on the individual's level of skill, education, motivation, attitude and performance. A professional designation is not always required but most employers consider it important.

The number of building starts in a community is a good indicator of the employment situation for property managers in that community. More buildings generally means a greater demand for property managers.

Property managers are part of the larger National Occupational Classification 1224: Property Administrators. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Finance, Insurance and Real Estate**
- **Oil and Gas Extraction**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta

- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 4,300 Albertans are employed in the Property Administrators occupational group which is expected to grow 1.0 to 2.0 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 40 to 90 **new** positions will be created each year **in addition** to job openings created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Salaries for property managers vary greatly depending on the employing organization, the responsibilities involved and the background of the manager.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Property Administrators occupational group working part-time or full-time earned from **$9,900 to $52,700 a year.** The average salary was **$32,700 a year.** Commercial property managers may earn considerably more.

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Real Estate Association (AREA) website: www.abrea.ab.ca

Building Owners and Managers Association (BOMA) website: www.bomacanada.org

Canadian Condominium Institute (CCI) website: www.cci.ca

Institute of Real Estate Management (IREM) website: www.irem.org

International Facility Management Association (IFMA) website: www.ifma.org

Real Estate Council of Alberta (RECA) website: www.reca.ab.ca

Real Estate Institute of Canada (REIC) website: www.reic.ca

Related Occupational Profiles

Building Operator
Building Superintendent

Related High School Subjects

Enterprise and Innovation; Financial Management; Information Processing; Language Arts; Legal Studies; Management and Marketing; Mathematics; and Social Studies

Related Post-Secondary Fields of Study

Business, Management and Administrative Studies

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Prosthetic/Orthotic Technician

Produced MARCH 2005

Prosthetic/orthotic technicians work with prosthetists and orthotists in the production, fabrication and repair of prostheses (artificial limbs) and orthoses (braces and supports) that are used to support weakened body parts, correct body defects or replace amputated limbs.

NOC Number(s): 3219.4
Minimum Education: 2 years post-secondary education/training
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: **O I M**

Duties

Prosthetic/orthotic technicians may specialize in prosthetics or orthotics, or work on both types of devices. In general, they:

- design, fabricate and refurbish orthotic/prosthetic devices from plaster cast positives and assessment forms
- make othotic/prosthetic devices using materials such as thermoplastic and thermosetting materials, metal alloys and leather
- service and repair appliances as required
- maintain an inventory of materials
- help serve patients as directed
- service and repair machinery used in the fabrication of devices.

Working Conditions

Prosthetic/orthotic technicians usually work in laboratories and workshops, standing at workbenches and using a variety of machines such as grinders, sanders, buffers, drill presses, lathes, welding equipment and sewing machines. They may be required to lift items weighting up to 25 kilograms.

At times, technicians may be under pressure to meet deadlines.

Personal Characteristics

Prosthetic/orthotic technicians need the following characteristics:

- good manual dexterity
- strength and stamina
- patience
- mechanical ability and inventiveness
- the ability to work quickly
- good problem-solving and decision-making skills
- good interpersonal skills
- good communication skills
- the ability to work well as a member of a team.

They should enjoy working with tools and machinery at tasks requiring precision, analyzing measurements and building devices, and having clear rules and guidelines for their work.

Educational Requirements

Prosthetic/orthotic technicians need at least a basic knowledge of mathematics, chemistry, physics and biology. They may be trained on the job or have a combination of related formal and on-the-job training.

George Brown College of Applied Arts and Technology in Toronto offers a two year Orthotic/Prosthetic Technician program. The entrance requirement is a high school diploma or equivalent with at least Grade 11 physics and biology. Admissions tests, an interview and manual dexterity tests are required. For more information about the program and mature student admission, please check the College calendar or website.

Other Requirements

Prosthetic/orthotic technicians may write examinations in prosthetics or orthotics to register with the **Canadian Board for Certification of Prosthetists and Orthotists**. There are two ways to become registered:

- After four years of on-the-job training, candidates supervised by a certified orthotist or prosthetist, or a registered orthotic or prosthetic technician, may write a registration examination in prosthetics or orthotics. If they so desire, after an additional 24 months under a certified practitioner, they may write the required examination for the other specialization (prosthetics or orthotics).
- After successful completion of the technical diploma program at George Brown College and 22 months of on-the-job training, prosthetic/orthotic technicians may write a registration examination in prosthetics or orthotics. An additional 12 months under a certified practitioner is required to write the examination for the other specialization.

Employment and Advancement

(section revised JANUARY 2006)

Prosthetic/orthotic technicians are employed in:

- private clinics
- hospital rehabilitation departments
- government agencies.

Prosthetic/orthotic technicians may advance to supervisory positions.

Prosthetic/orthotic technicians are part of the larger National Occupational Classification 3219: Other Medical Technologists and Technicians (Except Dental Health). In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Health Care and Social Assistance**
- **Other Manufacturing**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 200 Albertans are employed in the Other Medical Technologists and Technicians (Except Dental Health) occupational group which is expected to grow 2.1 to 3.1 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover. (**Note**: Since prosthetic/orthotic technicians form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for prosthetic/orthotic technicians.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Salaries for prosthetic/orthotic technicians vary considerably, ranging from **$33,000 to $46,000 per year (2005 estimate).**

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Other Medical Technologists and Technicians (Except Dental Health) occupational group working part-time or full-time earned from **$26,900 to $74,600 a year.** The average salary was **$61,000 a year.**

For information about current collective agreements in the public and not-for-profit sectors, see the Health Sciences Association of Alberta (HSAA) website.

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

Canadian Association of Prosthetists and Orthotists (CAPO) website: www.pando.ca

Health Sciences Association of Alberta (HSAA) website: www.hsaa.ca

Related Occupational Profiles

Denturist
Prosthetist and Orthotist

Related High School Subjects

Fabrication Studies; Language Arts; Mathematics; Physical Education; and Science (Biology; Chemistry; and Physics)

Related Post-Secondary Fields of Study

Health Care and Medical Sciences

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Prosthetist and Orthotist

Produced MARCH 2005

Prosthetists and orthotists work from physicians' prescriptions to design, fabricate, fit and repair prosthetic devices (artificial limbs) and orthotic devices (braces and supports) which are used to support weakened body parts, correct body defects or replace lost limbs.

NOC Number(s): 3219.3
Minimum Education: 2 years post-secondary education/training
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: **O I D**

Duties

Prosthetists and orthotists may specialize in prosthetics or orthotics, or work on both types of devices. In general, they:

- examine clients to identify factors affecting the fit of devices
- measure clients, take negative impressions and make plaster/fiberglass casts of limbs for which appliances will be made, or capture shapes digitally to assure proper fit
- select appropriate materials and design devices
- fabricate devices or supervise the work of prosthetic/orthotic technicians
- fit and adjust finished products for maximum comfort and usefulness.

Most prosthetists and orthotists work with health care professionals on rehabilitation teams and follow up with clients to ensure proper device function over time.

Working Conditions

Prosthetists and orthotists work in a variety of settings including clinics, laboratories, work rooms and fitting rooms. They work directly with clients to develop specifications for fabrication. Usually, they work a regular five day work week but weekend work may be required for emergency cases.

Prosthetists and orthotists stand for long periods of time and may be required to lift items weighing up to 25 kilograms.

Personal Characteristics

Prosthetists and orthotists need the following characteristics:

- strong communication skills
- patience and problem-solving skills
- the ability to work with a variety of people including clients, physicians, physical therapists, nurses and technicians
- time management and organizational skills
- manual dexterity
- mechanical aptitude
- good physical health.

They should enjoy working with tools, instruments and machinery at tasks requiring precision, analyzing specifications and solving problems, and directing the activities of others.

Educational Requirements

Prosthetists and orthotists who own their own businesses need business skills as well as clinical and technical skills.

In Canada, the following institutions offer accredited prosthetic/orthotic programs in English:

- The **British Columbia Institute of Technology (BCIT)** in Burnaby offers a two year Prosthetics and Orthotics Technology diploma program. The entrance requirement is a high school diploma with at least a C+ average and courses in Grade 12 English and mathematics and Grade 11 physics. Metal and wood working experience is recommended.
- The **George Brown College of Applied Arts and Technology** in Toronto offers a two year Clinical Methods in Orthotics/Prosthetics diploma program. The entrance requirement is successful completion of the Orthotic/Prosthetic Technician program offered by the College or a degree in a related science.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Graduates of clinical programs must enter an internship program to specialize in prosthetics or orthotics, or both (see below).

Other Requirements

After completing an internship of twenty-two months under the supervision of a certified prosthetist or orthotist, graduates of clinical programs are eligible to write the National Certification Examination in prosthetics or in orthotics, set by the Canadian Board for Certification of Prosthetists and Orthotists. This certification is required by most provincial funding agencies. To qualify to take the examination for the second discipline, those who are certified in a first discipline must complete a further 22 months of practical experience and internship in that area of specialty.

Employment and Advancement

(section revised JANUARY 2006)

Prosthetists and orthotists are employed in:

- private clinics and device manufacturing companies
- hospital rehabilitation departments and government agencies
- ambulatory care services and special treatment facilities (e.g. arthritis centres).

Many prosthetists and orthotists set up their own companies and work independently.

Prosthetists and orthotists are part of the larger National Occupational Classification 3219: Other Medical Technologists and Technicians (Except Dental Health). In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Health Care and Social Assistance**
- **Other Manufacturing**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 200 Albertans are employed in the Other Medical Technologists and Technicians (Except Dental Health) occupational group which is expected to grow 2.1 to 3.1 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover. (**Note**: Since prosthetists and orthotists form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for prosthetists and orthotists.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Certified prosthetists/orthotists earn from **$44,000 to over $65,000 per year.** Those who own their own businesses may earn more **(2005 estimates).**

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Other Medical Technologists and Technicians (Except Dental Health) occupational group working part-time or full-time earned from **$26,900 to $74,600 a year.** The average salary was **$61,000 a year.**

For information about current collective agreements in the public and not-for-profit sectors, see the Health Sciences Association of Alberta (HSAA) website.

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

Canadian Association of Prosthetists and Orthotists (CAPO) website: www.pando.ca

Health Sciences Association of Alberta (HSAA) website: www.hsaa.ca

Related Occupational Profiles

Dental Technologist
Prosthetic/Orthotic Technician

Related High School Subjects

Fabrication Studies; Language Arts; Mathematics; Physical Education; and Science (Biology; Chemistry; and Physics)

Related Post-Secondary Fields of Study

Health Care and Medical Sciences

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Psychiatric Aide

Produced FEBRUARY 2005

Psychiatric aides work under the direct supervision of health care professionals caring for people who are mentally ill, developmentally handicapped, cognitively impaired or brain injured.

NOC Number(s): 3413
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: **S M o**

Duties

In hospitals, psychiatric aides:

- provide routine physical, emotional, psychological and rehabilitation care for patients
- assist with treatments and procedures
- organize and supervise activities
- assist in maintaining a clean, orderly and safe environment
- attend to the personal needs of patients
- observe and assist patients.

In long-term care facilities, psychiatric aides perform a variety of routine unit/group home functions related to the care of people who have developmental disabilities. For example, psychiatric aides may:

- provide health maintenance and hygiene services (bathing, feeding, dressing)
- observe, report and record behaviours
- escort residents going to off-unit programs and activities, medical appointments or shopping malls
- teach daily living skills.

Psychiatric aides are primary care givers who allow the individuals they care for to take as much responsibility as possible in daily planning and decision making.

Working Conditions

This work can be physically and emotionally demanding. Aides spend much of their shift on their feet and do a great deal of repetitive bending, stretching and lifting (up to 25 kg).

Shift work is required in hospitals and long-term care facilities.

Personal Characteristics

Psychiatric aides should possess the following characteristics:

- patience and tolerance
- the ability to remain calm in stressful situations
- physical strength and manual dexterity
- the ability to follow instructions
- good observation skills
- good communication skills
- the ability to work effectively as a member of a team.

They should enjoy helping people, having clear guidelines and organized methods for their work, and operating tools, equipment and machinery.

Educational Requirements

Psychiatric aides receive **extensive in-service training** particularly during their first month of employment.

Job applicants should have a high school diploma and current CPR (Cardiopulmonary Resuscitation) certification. Experience in dealing with special populations, first aid certification, social science courses at the post-secondary level or training as a personal care attendant are definite assets. For information about related training programs, see the Personal Care Attendant occupational profile.

Employment and Advancement

(section revised JANUARY 2006)

Psychiatric aides work in institutions for the:

- brain injured
- aged
- mentally ill
- developmentally handicapped
- physically ill.

Without additional education, advancement opportunities for psychiatric aides are limited.

Psychiatric aides are part of the larger National Occupational Classification 3413: Nurses Aides and Orderlies. In Alberta, most people employed in this classification work in the **Health Care and Social Assistance** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Health Care and Social Assistance industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 18,150 Albertans are employed in the Nurses Aides and Orderlies occupational group which is expected to grow 2.7 to 3.7 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 490 to 680 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since psychiatric aides form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for psychiatric aides.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Nurse Aides and Orderlies occupational group working part-time or full-time earned from **$13,300 to $73,200 a year.** The average salary was **$24,700 a year.**

For information about current collective agreements in the public and not-for-profit sectors, see the Health Sciences Association of Alberta (HSAA) website.

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Health Sciences Association of Alberta (HSAA) website: www.hsaa.ca

Related Occupational Profiles

Personal Care Attendant

Related High School Subjects

Community Health; Language Arts; and Physical Education

Related Post-Secondary Fields of Study

Health Care and Medical Sciences

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Psychiatric Nurse

Produced SEPTEMBER 2004

Psychiatric nurses provide professional nursing and mental health nursing services in mental health care facilities and in the community. They promote and help people restore and maintain good mental health.

NOC Number(s): 3152.4
Minimum Education: 2 years post-secondary education/training
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: **S M D**

Duties

Psychiatric nurses may work independently or as part of a health care team. In general, they may:

- complete physical and mental health assessments
- develop strategies for helping clients to be as independent as possible
- plan, implement and document physical and mental health nursing care plans
- evaluate and update nursing care plans as needed
- provide nursing care as needed
- administer and assess the effects of prescribed medications and treatments
- observe and report behavioural changes
- encourage patients to participate in interpersonal and other therapeutic activities to enhance their interpersonal skills
- teach strategies and activities designed to promote wellness.

In developing and implementing therapeutic programs, psychiatric nurses work in co-operation with other health care professionals including psychiatrists, physicians, psychologists, social workers, recreational therapists and occupational therapists.

For information about nursing duties in acute care and long term care settings, see the Registered Nurse occupational profile.

Working Conditions

Psychiatric nursing can be intellectually, physically and emotionally demanding. In institutional settings, nurses work a variety of shifts including nights, weekends and holidays. They may be required to assist with lifting and transferring patients, and direct or assist with meeting patients' basic needs.

Working in community settings may involve driving to various locations.

Personal Characteristics

Psychiatric nurses need the following characteristics:

- patience, understanding and a caring attitude
- maturity and self-discipline
- problem-solving and critical-thinking abilities
- effective verbal and written communication skills
- good judgment, especially in stressful situations
- good physical health.

They should enjoy working with and consulting others, taking a methodical approach to compiling information and administering treatments, and directing the work of others.

Educational Requirements

The minimum education requirement for psychiatric nurses is a **diploma in psychiatric nursing**.

In Alberta, the following post-secondary institutions offer programs specifically related to psychiatric nursing:

- **Grant MacEwan College** in Edmonton offers a two year Psychiatric Nursing diploma program at its Alberta Hospital Ponoka campus. The entrance requirement is a high school diploma or equivalent with an average of at least 65 per cent in English 30, Biology 30, Chemistry 30 or Science 30, Math 30 or 31, and one other 30-level subject from the humanities, sciences or fine arts. An immunization and clear security clearance are also required.
- **Mount Royal College** in Calgary offers a six course Advanced Studies in Mental Health certificate program by online distance education. Applicants must be registered nurses (or eligible for registration) or registered psychiatric nurses, or have a post-secondary diploma or degree in a related discipline such as social work. With permission from the co-ordinator, fourth year nursing students and people already working in the field may register in individual courses.

For current information about programs and mature student admission policies, please check post-secondary calendars or websites.

For information about post-secondary programs for registered nurses, see the Registered Nurse occupational profile.

Other Requirements

(section revised OCTOBER 2004)

Under Alberta's Health Disciplines Act and Psychiatric Nurses Regulation, only registered members of the Registered Psychiatric Nurses Association of Alberta (RPNAA) may call themselves Psychiatric Nurses. Registered members provide health services listed in the Regulation.

Employment and Advancement

(section revised JANUARY 2006)

Approximately one third of the psychiatric nurses employed in Alberta work in two large psychiatric hospitals. Most of the rest are employed by:

- community mental health programs/clinics, support services for persons who have disabilities, and chemical dependency (drug and alcohol) centres and programs
- residential care and institutional facilities for people who have developmental handicaps
- acute care facilities (e.g. hospitals)
- extended care facilities
- school boards
- correctional institutions
- youth centres
- social service departments
- halfway houses.

Psychiatric nurses also may work as consultants to community agencies, public health nurses or foster home parents.

Psychiatric nurses are part of the larger National Occupational Classification 3152: Registered Nurses. In Alberta, most people employed in this classification work in the **Health Care and Social Assistance** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Health Care and Social Assistance industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 27,150 Albertans are employed in the Registered Nurses occupational group which is expected to grow 3.3 to 4.3 per cent each year from 2005 to 2010 in Alberta. It is forecasted that over 600 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since psychiatric nurses form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for psychiatric nurses.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Salaries for nurses vary depending on the employer and the nurse's educational qualifications, experience and responsibilities.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Psychiatric Nurses occupational group working part-time or full-time earned from **$37,700 to $61,700 a year.** The average salary was **$54,200 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Canadian Federation of Nurses Unions (CFNU) website: www.nursesunions.ca

Canadian Nurses Association (CNA) website: www.cna-nurses.ca

Psychiatric Nursing in Canada website: members.tripod.com/~psychnursing

Registered Psychiatric Nurses Association of Alberta (RPNAA) website: www.rpnaa.ab.ca

United Nurses of Alberta (UNA) website: www.una.ab.ca

Related Occupational Profiles

Community Health Nurse
Licensed Practical Nurse
Mental Health Worker
Occupational Health Nurse
Registered Nurse
Social Worker

Related High School Subjects

Community Health; Language Arts; Mathematics; Physical Education; and Science (Biology; and Chemistry)

Related Post-Secondary Fields of Study

Health Care and Medical Sciences

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Psychiatrist

Produced OCTOBER 2004

Psychiatrists are physicians (medical doctors) who specialize in the diagnosis and treatment of mental illness and emotional disorders, and act as consultants for other physicians.

NOC Number(s): 3111.1
Minimum Education: 8 + years post-secondary education/training
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: **I S D**

Duties

In general, psychiatrists:

- assess each patient individually
- design care plans which may include treatments ranging from family or group therapy to medication management
- counsel outpatients and other patients in their offices
- visit patients in hospitals
- attend meetings with other hospital staff to discuss treatment plans and progress
- diagnose and treat mental health emergency cases in hospital emergency rooms
- engage in research to further knowledge related to mental health
- speak to community groups and organizations about mental health issues
- serve on committees to promote and maintain mental health services and delivery systems in their communities
- teach in university medical schools.

Most psychiatrists work as members of health care teams that often include other physicians, psychologists, social workers, psychiatric nurses and other health care professionals.

Psychiatrists may specialize in caring for people in particular age groups (e.g. children, the elderly) or in caring for people who suffer from particular types of disorders. Their treatment approaches may be primarily analytic, psychotherapeutic or biological but they should be able to provide or refer patients for all types of approaches.

Some psychiatrists conduct research into brain structure, biochemistry or psychotherapy.

Working Conditions

Psychiatrists work in hospitals, mental health clinics and private offices. Like other physicians, they often work long hours. Some have private practices as well as being on staff at hospitals and most staff psychiatrists participate in an on-call roster.

Personal Characteristics

Psychiatrists need the following characteristics:

- the intellectual ability required to successfully complete the academic training
- a genuine interest in people and a desire to help them
- the stamina required to work long hours
- emotional strength and maturity
- an understanding of their own personalities, strengths and weaknesses
- a high tolerance for uncertainty
- good communication skills
- the ability to inspire trust

- the ability to work with patients collaboratively to help them get better.

Psychiatrists should enjoy co-ordinating information, dealing with people and directing the work of others.

Educational Requirements

In Canada, psychiatrists must take **11 to 12 years of training after high school**. They must successfully complete a **Doctor of Medicine** (MD) degree, then complete a five year post-graduate residency training program with a specialization in psychiatry.

In Alberta, MD programs are offered by the following institutions:

- The **University of Alberta** in Edmonton. The entrance requirement is satisfactory completion of at least two years of university studies with courses in organic and inorganic chemistry, English, physics, biology, biochemistry and statistics.
- The **University of Calgary**. The entrance requirement is completion of at least three years of recommended Arts and Sciences courses at a recognized post-secondary institution.

Because these are quota programs, many applicants who fulfil the entrance requirements cannot be accepted. Successful applicants are selected on the basis of:

- academic grades
- letters of recommendation
- personal interviews
- the results of a Medical College Admission Test (MCAT).

The required university courses may be taken entirely at the University of Calgary or the University of Alberta or, in part, at other post-secondary institutions.

Post-secondary institutions across Alberta offer university transfer programs that allow students to apply up to two years of study toward university Bachelor's degree programs. It is the student's responsibility to ensure that the courses they choose to take will be accepted for credit at the institution to which they wish to transfer. When planning their university studies, prospective students should contact both Faculty of Medicines' admissions offices to ensure that they acquire all of the necessary prerequisites.

In general, the admission requirement for university and university transfer programs is a high school diploma or equivalent with a specified minimum average (ranging from 65 to 80 per cent) in English 30, Pure Math 30 and three other appropriate Grade 12 subjects (usually Biology 30, Physics 30 and Chemistry 30).

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Other Requirements

Under Alberta's Medical Profession Act, you must be a registered member of the College of Physicians and Surgeons of Alberta (CPSA) to practice medicine in Alberta.

Employment and Advancement

(section revised JANUARY 2006)

Many psychiatrists have their own private practices. In addition, psychiatrists may apply for privileges to work in general hospitals that have psychiatric wards or outpatient clinics. They also may enter into contractual arrangements to work in:

- provincial psychiatric hospitals and mental health clinics
- school districts
- community agencies
- outpatient clinics
- university medical schools.

Psychiatrists may specialize in particular types of patients (e.g. children) or types of disorders, or advance to supervisory or administrative positions in the health field.

Psychiatrists are part of the larger National Occupational Classification 3111: Specialist Physicians. In Alberta, most people employed in this classification work in the **Health Care and Social Assistance** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Health Care and Social Assistance industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 2,600 Albertans are employed in the Specialist Physicians occupational group which is expected to grow 3.5 to 4.5 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 90 to 120 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since psychiatrists form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for psychiatrists.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Most psychiatrists in private or group practice are paid by provincial health insurance programs according to the volume and type of services they provide. Their incomes vary widely.

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Medical Association (AMA) website: www.albertadoctors.org

Canadian Psychiatric Association (CPA) website: www.cpa-apc.org

Related Occupational Profiles

Geriatric Medicine Specialist
Pathologist
Pediatrician
Physician
Psychologist

Related High School Subjects

Community Health; Language Arts; Mathematics; and Science (Biology; Chemistry; and Physics)

Related Post-Secondary Fields of Stud

Health Care and Medical Sciences

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Psychologist

Produced JULY 2005

Psychologists assess, diagnose and treat psychological, emotional and behavioural disorders. They also research and apply theories relating to behaviour and mental processes.

NOC Number(s): 4151
Minimum Education: 6 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **S I M**

Duties

Psychologists are concerned with the study and management of human behaviour. Since the field is so broad, they usually specialize in a particular area.

Clinical psychologists diagnose and treat emotional or adjustment problems in children, adults, families or groups. They treat the psychological factors associated with physical health problems. They may use a variety of assessment methods to assess problems and to design, implement and evaluate treatment programs. Clinical psychologists may specialize further in:

- adult or child clinical psychology
- health psychology
- forensic psychology
- clinical neuropsychology.

Clinical psychologists spend much of their time in direct contact with clients and are usually employed in hospitals, clinics, mental health facilities, prisons or private practice.

Counselling psychologists provide individual, group or family counselling services, and spend the majority of their time in direct contact with clients. They may use a variety of assessment methods to provide consulting services to schools, social service agencies and businesses. Counselling psychologists may be employed in clinics, schools or rehabilitation centres or in private practice.

School psychologists assess and treat children who have educational, vocational and emotional problems, or provide consulting services for schools on issues related to classroom management. School psychologists may be employed by school authorities or work in private practice.

Industrial/organizational psychologists develop solutions for problems in business and industry. For example, they may work in areas such as:

- personnel selection and placement
- training and development
- organizational development and change
- performance measurement and evaluation
- quality of work life
- consumer psychology
- human factors psychology.

Although some large corporations employ industrial/organizational psychologists, most work as consultants.

Research or experimental psychologists conduct research in specific areas such as human development, psychopathology, social psychology, neuroscience, perception, motivation, emotion, learning, language or personality. Their research may involve observing and interviewing people to gain insight into behaviour, or working in laboratory settings where they focus on the effects of environment and heredity on human and animal behaviour. Research psychologists are usually employed by colleges and universities, government departments or private research agencies.

Working Conditions

Research psychologists spend most of their time in offices and research laboratories. Other types of psychologists may work in a variety of settings. Some routinely travel to several locations (e.g. school to school).

Psychologists' hours of work vary depending on their circumstances. They may work regular office hours or do some evening and weekend work as well.

Personal Characteristics

Psychologists who work directly with people need the following characteristics:

- a genuine interest in helping others
- emotional maturity and stability
- excellent communication skills
- a willingness to keep learning new approaches
- flexibility.

They should enjoy helping people, synthesizing information and developing innovative solutions to problems, and taking a methodical approach to reviewing literature and administering psychological tests.

Educational Requirements

(section revised SEPTEMBER 2005)

In Alberta, the minimum education requirement for psychologists is a master's degree with the coursework required to become a Chartered Psychologist. For example, it may be a Master of Arts (MA), Master of Science (M.Sc.) or Master of Education (M.Ed.) degree. In most Canadian provinces and American states, the minimum requirement is a doctoral (PhD) degree in a relevant aspect of psychology. Most clinical psychologists have a doctoral degree in clinical psychology; those who work in specialized settings such as clinical neuropsychology may have further training.

In Alberta, the following institutions offer appropriate **master's and doctoral** degree programs:

- The **Campus Alberta Graduate Program in Counselling**, a tri-university partnership of Athabasca University, the University of Calgary and the University of Lethbridge, offers a Master of Counselling degree program with a specialization in counselling psychology.
- The **University of Alberta** in Edmonton offers MA, M.Sc. and PhD degree programs in psychology, and M.Ed., Ed.D and PhD degree programs in educational psychology. St. Stephens College, affiliated with the University of Alberta, offers a MA degree program in pastoral psychology and counselling.
- The **University of Calgary** offers M.Sc. and PhD degree programs in clinical psychology, industrial/organizational psychology and psychology, and M.Ed., M.Sc. and PhD degree programs in educational psychology.
- The **University of Lethbridge** offers MA and M.Sc. degree programs in psychology.

The entrance requirement for a master's degree program in psychology is usually an acceptable average in a four year bachelor's degree program with a specialization in psychology (honours program preferred). In Alberta, the following institutions offer **four year** bachelor's degree programs with a major in psychology or educational psychology:

- **Athabasca University** offers a Bachelor of Arts (BA) degree program in psychology by distance education.
- **Canadian University College** in Lacombe offers a Bachelor of Science (B.Sc.) degree program in psychology.
- **Concordia University College of Alberta** in Edmonton offers a BA program in psychology with an applied emphasis.
- **Grande Prairie Regional College** offers a BA program in psychology in collaboration with Athabasca University.
- **Red Deer College** offers a BA degree (granted by the University of Calgary).
- **Taylor University College and Seminary** in Edmonton offers a BA program in psychology.
- **The King's University College** in Edmonton offers a BA program in psychology.
- **Red Deer College** offers BA and B.Ed. degree programs in collaboration with the University of Calgary and the University of Alberta.
- **Rocky Mountain College** in Calgary offers a BA in Human Services with a specialization in counselling psychology.
- **University of Alberta** in Edmonton offers BA, B.Sc. and B.Ed. degree programs in psychology and educational psychology.
- **University of Calgary** offers BA, B.Sc. and B.Ed. degree programs in psychology and educational psychology.
- **University of Lethbridge** offers BA, B.Sc., B.Ed. and combined degree programs in psychology and

educational psychology.

Entrance requirements for these programs vary but, in general, include a high school diploma with an average of at least 60 to 80 per cent (depending on the program) in English Language Arts 30-1 (or English 30) and four other approved Grade 12 subjects (e.g. Social Studies 30, Pure Math 30, Biology 30, Chemistry 30, a 30-level language other than English). Admission to Athabasca University is open to residents of Canada who are at least 18 years of age.

Post-secondary institutions throughout the province offer university transfer programs that allow students to apply up to two years of their college course work toward university Bachelor's degree programs. It is the student's responsibility to ensure that the courses they choose to take will be accepted for credit at the institution to which they wish to transfer.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Other Requirements

Under Alberta's Psychology Profession Act and Psychology Profession Regulation, only registered members of the College of Alberta Psychologists (CAP) may call themselves Psychologists or Chartered Psychologists. However, counsellors and others may provide services that are not defined as restricted activities in the Government Organization Act.

Employment and Advancement

(section revised JANUARY 2006)

Psychologists work in:

- mental health clinics
- correctional facilities
- hospitals
- private practices
- rehabilitation centres
- schools
- business and industrial settings
- post-secondary institutions.

Increasingly, psychologists are employed in program development and evaluation, community consultation and the administration of social services and mental health services provided by government and community agencies.

With experience or additional education, psychologists may move into administrative positions or teach psychology in post-secondary institutions.

In Alberta, over 75 per cent of people employed as psychologists work in the **Health Care and Social Assistance** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Health Care and Social Assistance industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 2,100 Albertans are employed in the Psychologists occupational group which is expected to grow 1.9 to 2.9 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 30 to 70 **new** positions will be created each year **in addition** to job openings created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Psychologists occupational group working part-time or full-time earned from **$17,500 to $172,700 a year.** The average salary was **$61,200 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Canadian Psychological Association website: www.cpa.ca/Psychologist/QFacts.htm

College of Alberta Psychologists website: www.cap.ab.ca

Psychologists' Association of Alberta website: www.psychologistsassociation.ab.ca

Related Occupational Profiles

Addictions Counsellor
Career Development Professional
Child and Youth Care Worker
Expressive Arts Therapists
Family/Marriage Counsellor
Mediator
Mental Health Worker
Psychiatrist
Social Worker
Special Needs Teacher

Related High School Subjects

Language Arts; Languages (other than English); Mathematics; Science (Biology; and Chemistry); and Social Studies

Related Post-Secondary Fields of Study

Education and Library Studies; Sciences; Social Sciences, Law and Religious Studies; and Social, Community and Protective Services

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For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Public Health Inspector

Produced DECEMBER 2003

Public health inspectors prevent disease and promote health by educating people about public health issues and enforcing health legislation.

NOC Number(s): 2263
Minimum Education: 4 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **M I D**

Duties

Public health inspectors investigate health-related complaints and inspect facilities to ensure that they comply with public health legislation and regulations. They inspect a variety of facilities, including:

- food processing, preparation and service establishments
- waste management systems
- workplaces
- hotels, motels and other accommodations
- schools
- child care and long term care facilities
- animal facilities
- private water supplies
- swimming pools, public beaches and recreational camps
- places of entertainment.

In general, public health inspectors assess the particular circumstances, provide advice and ensure compliance with policies and regulations regarding:

- food and water borne communicable diseases
- insect and rodent control
- food problems and institutional sanitation
- public health complaints
- outdoor and indoor air quality
- contaminated land.

Public health inspectors also educate the public to help people understand regulations and the need for proper health protection. For example, they may be involved in injury prevention programs, tobacco control programs or other health promotion programs.

Working Conditions

Public health inspectors spend a significant portion of their time conducting inspections in a wide range of work settings. While in their offices, they prepare reports, set up schedules and answer questions from the public. They normally work alone but may consult with other health team members and health professionals.

Public health inspectors usually work regular office hours. However, overtime is sometimes required.

Lifting up to 10 kilograms may be required.

Personal Characteristics

Public health inspectors need the following characteristics:

- good interpersonal skills
- good communication skills

- problem-solving and decision-making skills.

They should enjoy having clear rules and organized methods for their work, analyzing information and dealing with people.

Educational Requirements

Public health inspectors must have **a bachelor's degree in a related discipline**.

In Alberta, post-secondary institutions throughout the provide offer related degree programs. **Concordia University College of Alberta** in Edmonton offers a Bachelor of Environmental Health (after degree) program. The entrance requirement is an undergraduate degree, preferably a Bachelor of Science degree in a related discipline.

Outside Alberta:

- the **British Columbia Institute of Technology (BCIT)** in Burnaby offers a Bachelor of Technology program in Environmental Health. This two year program is designed for people who have already completed a technical diploma program or two years of post-secondary study with a strong sciences emphasis. Preference is given to applicants who have completed their entrance requirements within five years of applying and have at least a B in English and C+ in the required science courses.
- **Ryerson University** in Toronto offers a four year Bachelor of Applied Science - Occupational and Public Health degree program. The entrance requirement for Alberta applicants is an Alberta high school diploma with an overall average of at least 70 per cent in five academic Grade 12 subjects (including English 30) and a minimum of 60 per cent in Chemistry 30 or Biology 30. Both sciences, as well as Physics 30 and Math 30 or 31 (or equivalent) are recommended. Ryerson also offers a two year program for applicants who already have a bachelor's degree from an accredited university.
- the **University College of Cape Breton** in Sydney, Nova Scotia offers a four year Bachelor of Technology program in Environmental Health. The entrance requirement is a high school diploma with an average of at least 60 per cent in required English, math and chemistry courses. Physics is recommended.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Other Requirements

Except in Quebec, public health inspectors must be certified by the Board of Certification of the Canadian Institute of Public Health Inspectors. Candidates who have an approved bachelor's degree in public health and twelve weeks of acceptable field work experience must pass national examinations and submit two field reports to qualify for the Certificate of Public Health Inspection (Canada) designation.

Employment and Advancement

(section revised JANUARY 2006)

Public health inspectors are employed in:

- regional, provincial and national health departments
- environmental and pollution control departments
- industry
- sewage and water treatment plants
- agencies interested in industrial health and hygiene or food sanitation
- solid waste management agencies.

The greatest number of public health inspector positions are found in local public health agencies. Public health inspectors may also work as private consultants.

Experienced inspectors may advance from staff inspector to environmental health specialist and senior inspector positions, and possibly to chief inspector or director positions.

Public health inspectors are part of the larger National Occupational Classification 2263: Inspectors in Public and Environmental Health and Occupational Health and Safety. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Public Administration**
- **Oil and Gas Extraction**

- **Professional and Technical Services**
- **Health Care and Social Assistance**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 2,100 Albertans are employed in the Inspectors in Public and Environmental Health and Occupational Health and Safety occupational group which is expected to grow 1.0 to 2.0 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 20 to 50 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since public health inspectors form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for public health inspectors.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Inspectors in Public and Environmental Health and Occupational Health and Safety occupational group working part-time or full-time earned from **$18,300 to $172,300 a year.** The average salary was **$62,500 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Canadian Institute of Public Health Inspectors, Alberta website: www.ciphi.ab.ca

Canadian Institute of Public Health Inspectors, national website: www.ciphi.ca

Related Occupational Profiles

Community Health Nurse
Environmental Auditor
Food Scientist
Hazardous Waste Management Technologist
Occupational Health and Safety Inspector

Related High School Subjects

Community Health; Foods; Language Arts; Legal Studies; Mathematics; Physical Education; and Science (Biology; Chemistry; and Physics)

Related Post-Secondary Fields of Study

Health Care and Medical Sciences; and Sciences

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Public Relations Representative

Produced DECEMBER 2005

Public relations representatives help organizations achieve their objectives by facilitating communication links between organizations and the audiences they wish to reach.

NOC Number(s): 5124
Minimum Education: 2 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **I M S**

Duties

Duties and responsibilities vary from one position to another but, in general, public relations representatives:

- create and maintain public awareness of their organizations' policies and actions
- foster good community relations
- facilitate communications within the organization between employees and management
- develop, implement and evaluate strategic communications programs
- act as media and stakeholder contacts for their organizations
- conduct research (e.g. public opinion and attitude surveys) and communicate results
- prepare speeches, news/media releases, brochures, audio-visuals, advertisements, reports, articles, newsletters and websites for defined audiences
- identify the interests and concerns of key groups their organizations serve
- co-ordinate special events and promotions for internal and external audiences
- manage issues that relate to their organization
- provide consultative services to management to facilitate communications with target groups.

Junior employees handle routine work such as:

- responding to requests for information from the public
- researching and writing copy for specific projects
- conducting tours of organizational facilities
- writing news releases and pitching story ideas to the media
- media tracking and issue tracking
- assisting senior practitioners with projects or programs
- maintaining current distribution lists.

Senior employees may:

- respond to requests for information from the media or designate another appropriate spokesperson
- work with other managers to identify trends and issues and determine strategies for implementing public relations programs
- integrate goals and objectives from the organization's business plan to develop public relations programs and strategies
- advise managers regarding how communications and perceptions affect business issues and decisions.

Once a program concept is approved, the public relations department is responsible for implementing the program and budgeting, managing and evaluating the results.

Working Conditions

Work schedules for public relations representatives are often irregular and subject to frequent interruption. Meeting project deadlines may require working overtime. Considerable travel may be involved.

Personal Characteristics

Public relations representatives need the following characteristics:

- creativity
- initiative
- good oral and written communication and presentation skills
- excellent interpersonal skills including good coaching, consultation and negotiation skills
- self-confidence
- the ability to analyze problems and find practical solutions
- sensitivity
- excellent organizational, multi-tasking and planning abilities.

They should enjoy co-ordinating information and finding innovative ways to handle problems, taking a methodical approach to gathering, researching and editing information, and persuading people.

Educational Requirements

Employers generally prefer to hire applicants who have post-secondary education related to public relations or communications. Many employers require a combination of qualifications such as a degree in any field plus a diploma or additional degree in public relations, communications or journalism. They also may require applicants to be members or eligible for membership in a professional organization such as the **Canadian Public Relations Society (CPRS)** or the **International Association of Business Communicators (IABC)**. Keyboarding and computer skills are a definite asset.

Post-secondary institutions across Alberta offer related diploma and degree programs. The following institutions offer programs specifically in public relations or communications:

- **Athabasca University** offers a post-diploma Bachelor of Professional Arts degree program in Communications Studies through distance education. Applicants must hold a recognized two or three year diploma in a related field from a college or technical institute, or equivalent.
- **Grant MacEwan College** in Edmonton offers a Public Relations diploma program. The entrance requirements are a minimum of 30 post-secondary credits including post-secondary English or equivalent, and at least 70 per cent on an English entrance exam. The College also offers a Bachelor of Communications in Professional Writing degree program.
- **Lethbridge Community College** offers a two year Communication Arts diploma program with a specialization in advertising/public relations. The entrance requirement is a high school diploma or equivalent with at least 60 per cent in English Language Arts 30-1 (or 70 per cent in ELA 30-2, or equivalent) and Social Studies 30. A 500 word composition also is required.
- **Mount Royal College** in Calgary offers a Bachelor of Applied Communications degree program with a specialization in public relations. The entrance requirement is a high school diploma or equivalent with an average of at least 60 per cent in English Language Arts 30-1, Social Studies 30 and three other appropriate Grade 12 subjects. The College also offers a four course Basic Public Relations program through Continuing Education.
- The **University of Calgary** offers four year degree and five year co-operative education degree programs in Communications Studies. The entrance requirement is a high school diploma or equivalent with a competitive average in English Language Arts 30-1 or English 30, Pure or Applied Math 30 or Math 31 (or equivalent), and three of the following: Biology 30, Chemistry 30, Physics 30, Social Studies 30, Science 30, a language 30 other than English, one five credit Grade 12 subject. French 30, 30S, 30N, Francais 30 or French Language Arts 30 is strongly recommended.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

For information about journalism programs, see the Reporter occupational profile.

Employment and Advancement

(section revised JANUARY 2006)

Public relations representatives are employed by:

- federal, provincial and municipal governments
- corporations and consulting firms
- professional organizations and trade associations
- health authorities

- educational institutions
- financial institutions
- political and social organizations
- industry organizations.

Freelancing as a consultant is an alternative for those who have experience in government or the private sector. There also are opportunities to work for public relations/marketing firms as consultants.

Public relations representatives are part of the larger National Occupational Classification 5124: Professional Occupations in Public Relations and Communication. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Public Administration**
- **Professional and Technical Services**
- **Repair, Maintenance, Personal and Other Services**
- **Information, Culture and Recreation**
- **Finance, Insurance and Real Estate**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 4,050 Albertans are employed in the Professional Occupations in Public Relations and Communication occupational group which is expected to grow 1.3 to 2.3 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 50 to 100 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since public relations representatives form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for public relations representatives.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Professional Occupations in Public Relations and Communications occupational group working part-time or full-time earned from **$19,800 to $104,900 a year.** The average salary was **$55,400 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Canadian Public Relations Society (CPRS) website: www.cprs.ca

International Association of Business Communicators (IABC) website: www.iabc.com

Related Occupational Profiles

Aboriginal Liaison
Advertising Account Executive
Canadian Forces Personnel - Commissioned Officer
Creative Writer
Fundraiser
Home Economist
Human Ecologist
Marketing Manager
Producer - Film, Radio, Television and Theatre
School Business Official
Volunteer Manager
Webmaster

Related High School Subjects

Communication Technology; Fine Arts (Drama); Information Processing; Language Arts; Languages (other than English); Management and Marketing; Mathematics; Social Studies; and Tourism Studies

Related Post-Secondary Fields of Study

Business, Management and Administrative Studies; Communications; and Social Sciences, Law and Religious Studies

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For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Pulpmill Operator

Produced OCTOBER 2005

Pulpmill operators operate and monitor processing machinery and equipment to produce pulp for use in the production of paper.

NOC Number(s): 9432
Minimum Education: High school diploma
Employment Outlook: Employment turnover plus below average occupational growth in Alberta
Interests: O M i

Duties

Pulpmills use different processes to extract cellulose fibres from wood chips, sawmill residues and other raw materials. In kraft mills, huge pressure cookers called digesters mix wood chips with soda-based chemicals to break the fibres down into pulp. In CTMP mills, a chemithermomechanical (CTMP) process is used. The complexity of these operations varies from one situation to another.

Pulpmill operators' duties and responsibilities vary depending on the type of equipment but, in general, they:

- operate and monitor screening equipment, mixing tanks, washers, hoisting equipment, forming, cutting and packaging equipment or other machines used in cellulose processing
- monitor equipment and machinery panel indicators, gauges, level indicators and other equipment instruments to detect malfunctions and ensure processing steps are carried out according to specifications
- initiate changes or communicate with the control operator to make process adjustments and start up or shut down machinery and equipment as required
- collect processing samples and conduct titration tests, pH readings and other routine tests on pulp and solutions
- maintain and complete production reports.

Working Conditions

Pulpmill operators work shifts. They work in an environment that is often hot, humid and noisy. Kraft mills are sometimes smelly. Safety shoes, hard hats, ear plugs, safety glasses and other safety equipment are required to reduce the risk of injury. Overtime is sometimes required.

The work involves considerable walking, standing and climbing ladders or stairs. Lifting up to 10 kilograms may be required.

Personal Characteristics

Pulpmill operators need the following characteristics:

- manual dexterity and mechanical aptitude
- the ability to work in a potentially hot, damp or dusty environment
- the ability to wait for lunch breaks until operational demands permit time
- the ability to perform repetitious tasks and remain alert
- good oral communication skills and the ability to work well as part of a team.

In pulp mills operating on a self-directed work team structure, operators also need the management skills required for activities such as planning and scheduling, budgeting, training and coaching other workers.

All pulpmill operators should enjoy operating and monitoring equipment, having clear parameters and organized methods for their work, and working with others to solve problems.

Educational Requirements

The minimum education requirement is a high school diploma but some employers require operators to have specific courses such as English Language Arts 30-2 and Applied or Pure Math 30, or equivalent, and a fourth class power engineering certificate (see the Power Engineer occupational profile). Computer skills are a definite asset, especially skills related to data input, word processing, spread sheet development and dealing with digital or analogue outputs for controlling processing equipment.

Pulpmill operators **learn on the job.** They usually start in entry level labouring positions and progress to higher level positions as they become available. Some mills routinely rotate operators through different areas.

Employment and Advancement

(section revised JANUARY 2006)

Pulpmill operators are employed in pulp mills that are usually located near forested areas. Union membership may be a condition of employment.

Experienced pulpmill operators may advance to pulping control operator positions but further advancement opportunities are limited without additional training.

In Alberta, over 75 per cent of people employed as pulp mill machine operators work in the **Other Manufacturing** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Other Manufacturing industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

About 400 Albertans are employed in the Pulp Mill Machine Operators occupational group which is expected to grow up to 0.5 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Although the outlook for the pulp and paper industry is generally favourable, the continuing computerization of pulpmill operations is expected to have a negative impact on employment demand for pulpmill operators.

Salary

In Alberta, pulpmill operators earn from **$42,000 to $78,000 a year (2005 estimate)**.

Other Sources of Information

Alberta Forest Products Association (AFPA) website: www.albertaforestproducts.ca

Related Occupational Profiles

Refinery/Upgrader Process Operator
Sawmill Machine Operator

Related High School Subjects

Forestry; Language Arts; Mathematics; Physical Education; and Science (Chemistry; and Physics)

Related Post-Secondary Fields of Study

Trades, Industrial and Related Training

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Purchasing Agent

Produced MAY 2003

Purchasing agents buy goods, materials, supplies and services and ensure that they are of the quantity, quality, price and availability required by their organization.

NOC Number(s): 1225
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **M D s**

Duties

Duties and responsibilities vary from one position to another but, in general, purchasing agents:

- consult with other departments in the organization to determine what goods (e.g. equipment, office supplies) and services are needed
- develop strategic purchasing programs that consolidate company spending for specific commodities
- oversee the process of issuing requests for information and proposals, and tendering contracts to ensure that the process is fair, competitive, legal and provides best value for the organization
- analyze proposals or tenders
- purchase the right quality and quantity, at the right time and price, from the best possible source
- administer contracts for the supply of goods, services and space
- trace shipments, follow up undelivered goods, and resolve problems and disputes
- arrange the payment of duty and freight charges
- prepare and administer budgets and contracts.

In smaller organizations, purchasing agents may be directly involved in purchasing and expediting the delivery of goods. Depending on the urgency and value of the required products, orders may be submitted electronically or by telephone or facsimile. Purchasing agents usually ask suppliers for quotations in writing or call for public tenders, sometimes using local newspapers or the Internet to advertise them. The basic criterion in awarding a tender is to obtain the maximum value for the money spent as well as satisfy all specifications and requests. Errors can be very costly to the organization.

In larger organizations, experienced purchasing agents may:

- supervise buyers, purchasing clerks or expediters who review schedule shipments from suppliers and ensure deliveries are made on time and according to contracts.
- develop negotiation strategies and lead teams in supplier negotiations for goods or services
- implement processes that facilitate employee access to goods and services and reduce administrative costs
- analyze commodity vendor data and forecast trends
- recommend and implement approved purchasing policies and procedures
- develop and implement supplier performance management strategies
- administer purchasing card programs.

To keep up to date so they can make informed decisions, purchasing agents:

- use the Internet and read promotional literature including catalogues and trade journals
- consult legal and risk management personnel
- network with people in other purchasing departments
- inspect samples submitted by suppliers
- attend trade shows, conventions and seminars
- write and review product specifications
- negotiate with suppliers' representatives and end users.

Working Conditions

Purchasing agents work in an office environment. Travel, meeting deadlines or taking inventory may require working longer, irregular hours.

Personal Characteristics

Purchasing agents need the following characteristics:

- good communication skills, in person and in writing
- good organizational skills
- good negotiation skills and the ability to work with many kinds of people
- the ability to analyze purchasing options and make purchasing decisions involving large sums of money
- the ability to work independently or as part of a team
- a good memory for details
- the ability to adapt to a changing environment.

They should enjoy taking a methodical approach to compiling information, being responsible for projects and the work of others, and negotiating with people.

Educational Requirements

There are a **variety of ways to become a purchasing agent.** In the past, high school graduates have started in entry level positions such as purchasing clerk, expediter or junior buyer, or working in departments where stock is processed (e.g. stores or shipping/receiving). However, most employers prefer to hire applicants who have post-secondary education in business administration/commerce, supply chain management or economics, particularly for positions that involve cost analysis, legal issues and contract administration.

A number of employers provide training on the job for newly hired purchasing agents. Computer skills and familiarity with commonly used word processing, spreadsheet and database programs, and other technology used in e-commerce and for ordering is a definite asset.

Courses in purchasing, buying and finance are offered by the Extension or Continuing Education Divisions of universities, colleges and technical institutes and are definite assets for advancement. Individuals who have a university degree or college or technical institute diploma with courses in business administration or commerce may be able to start at a higher level and advance more quickly.

Some industries prefer to hire purchasing agents who have related background knowledge. For example, a chemical company might require purchasing agents in the company to have a diploma or degree in chemistry.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Other Requirements

(section revised OCTOBER 2004)

Certified Professional Purchaser is a protected title under Alberta's Professional and Occupational Associations Registration Act. This means that to call yourself a Certified Professional Purchaser, you must be a registered member of the Alberta Institute of the Purchasing Management Association of Canada (AIPMAC). You can be a member of the AIPMAC but do **not** have to be registered if you do not call yourself a Certified Professional Purchaser.

Employment and Advancement

(section revised JANUARY 2006)

Purchasing agents are employed by any organization where large sums of money are spent for equipment, supplies and services, including:

- federal, provincial and municipal governments
- construction and manufacturing companies
- school boards
- regional health authorities
- post-secondary institutions

- large business firms.

A typical advancement path might be from a clerical position to buyer and purchasing agent positions. With experience, purchasing agents may advance to management positions or move into related areas such as materials management, inventory management, traffic or transportation, quality control or finance.

Purchasing agents are part of the larger National Occupational Classification 1225: Purchasing Agents and Officers. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Oil and Gas Extraction**
- **Wholesale Trade**
- **Public Administration**
- **Construction**
- **Metals, Metal Fabrication and Machinery Manufacturing**
- **Other Manufacturing**
- **Professional and Technical Services**
- **Transportation and Warehousing**
- **Health Care and Social Assistance**
- **Wood Products Manufacturing**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

About 3,950 Albertans are employed in the Purchasing Agents and Officers occupational group which is expected to grow 1.9 to 2.9 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 70 to 120 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since purchasing agents form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for purchasing agents.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised SEPTEMBER 2005)

Salaries for purchasing agents vary greatly, depending on the size and nature of the organization, the responsibilities of the position and the agent's qualifications.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Purchasing Agents and Officers occupational group working part-time or full-time earned from **$19,100 to $129,200 a year.** The average salary was **$51,100 a year.**

Other Sources of Information

National Institute of Governmental Purchasing website: www.nigp.org

Purchasing Management Association of Canada website: www.pmac.ca

Related Occupational Profiles

Customs Broker
Human Ecologist
School Business Official

Related High School Subjects

Financial Management; Information Processing; Language Arts; Legal Studies; Logistics; Management and Marketing; and Social Studies

Related Post-Secondary Fields of Study

Business, Management and Administrative Studies; and Social Sciences, Law and Religious Studies

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Radiation Therapist

Produced DECEMBER 2004

Radiation therapists administer prescribed treatments for cancer patients that involve using ionizing radiation (e.g. x-rays, gamma rays or electrons).

NOC Number(s): 3215.3
Minimum Education: 2 years post-secondary education/training
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: **O M i**

Duties

Radiation damages and destroys cancer cells. Radiation treatments may be administered externally using high energy radiation machines such as linear accelerators, or internally by placing radioactive material into body cavities or tissue.

Radiation therapists work closely with medical specialists such as radiation oncologists and medical physicists. In general, radiation therapists:

- operate complex technical apparatus and treatment units
- plan the physical and technical aspects of radiation treatments
- construct patient positioning aides and individual treatment devices
- educate patients, families and significant others about treatments
- support and care for patients during each treatment session and implement appropriate follow-up care plans
- assess individual patients' reactions to treatments
- calculate actual treatment dosages delivered during each session.

Working Conditions

(section revised FEBRUARY 2005)

Working hours may vary including regular weekday hours and evening shifts. Radiation therapists lift and move patients and routinely use treatment accessories that weigh up to 10 kilograms.

Personal Characteristics

Radiation therapists need the following characteristics:

- good physical health
- a high degree of integrity
- meticulous work habits
- good communication skills
- an understanding of the special needs of cancer patients
- patience and consideration for people of all ages and backgrounds.

They should enjoy using tools and equipment to perform tasks requiring precision, following specific requirements and guidelines, compiling information and working with the public.

Educational Requirements

(section revised FEBRUARY 2005)

The **Alberta Cancer Board** offers a specialized 28 month diploma program for radiation therapists at the following institutions:

- the **Cross Cancer Institute** in Edmonton
- the **Tom Baker Cancer Centre** in Calgary.

The minimum entrance requirement for these programs is successful completion of 30 credits of university education, or equivalent, including courses in English (three credits), psychology/sociology (six credits), physics (six credits), anatomy and physiology (six credits) and statistics (three credits).

Four to six students a year are admitted to each program. Students are selected for an interview on the basis of :

- academic average
- medical experience or related work experience
- a written career investigation summary.

Other Requirements

(section revised AUGUST 2005)

Under Alberta's Health Professions Act, only registered members of the Alberta College of Medical Diagnostic and Therapeutic Technologists (ACMDTT) may call themselves a Magnetic Resonance Technologist, Nuclear Medicine Technologist, Radiographic Technologist or Radiation Therapist. Registered members provide health services listed in Schedule 12 of the Health Professions Act.

Employment and Advancement

(section revised JANUARY 2005)

In Alberta, radiation therapists are employed by the two cancer institutes listed above. In Canada, there are about 24 cancer care facilities that offer radiation therapy services.

Experienced radiation therapists may advance to senior therapist positions. With additional education and experience, they may move into management or teaching positions.

Radiation therapists are part of the larger National Occupational Classification 3215: Medical Radiation Technologists. In Alberta, most people employed in this classification work in the **Health Care and Social Assistance** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Health Care and Social Assistance industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 1,850 Albertans are employed in the Medical Radiation Technologists occupational group which is expected to grow 2.7 to 3.7 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 40 to 70 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since radiation therapists form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for radiation therapists.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Medical Radiation Technologists occupational group working part-time or full-time earned from **$37,300 to $71,800 a year.** The average salary was **$57,600 a year.**

For information about current collective agreements in the public and not-for-profit sectors, see the Health Sciences Association of Alberta (HSAA) website.

Other Sources of Information

Alberta College of Medical Diagnostic and Therapeutic Technologists (ACMDTT) website: www.acmdtt.com

Alberta Cancer Board website: www.cancerboard.ab.ca

Health Sciences Association of Alberta (HSAA) website: www.hsaa.ca

Related Occupational Profiles

Diagnostic Medical Sonographer
Magnetic Resonance Technologist
Nuclear Medicine Technologist
Radiological Technologist
Respiratory Therapist

Related High School Subjects

Community Health; Language Arts; Mathematics; Physical Education; and Science (Biology; and Physics)

Related Post-Secondary Fields of Study

Health Care and Medical Sciences

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Radiological Technologist

Produced JANUARY 2005

Radiological technologists operate x-ray equipment to produce images that are used to diagnose diseases and injuries.

NOC Number(s): 3215.1
Minimum Education: 2 years post-secondary education/training
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: **O M i**

Duties

Radiological technologists produce images of body structures. These images may be displayed on x-ray film, computer monitors, film, videotape or closed circuit television systems.

In general, radiological technologists:

- explain procedures to patients and answer questions
- help patients prepare for procedures, when necessary
- monitor patients during procedures
- provide primary patient care while patients are in the diagnostic imaging department
- ensure patient comfort and safety
- interpret physicians' requests for radiological examinations
- use appropriate techniques and positioning for different pathological conditions
- correctly position patients and equipment
- operate diagnostic imaging equipment to produce quality images that assist in diagnosis
- recognize various anatomical structures radiographed
- critique images to ensure high quality results
- follow radiation protection practices, regulations and philosophy to reduce risk to patients, staff and visitors.

Radiological technologists work in conjunction with other technologists (e.g. nuclear medicine technologists, diagnostic medical sonographers, magnetic resonance technologists, combined laboratory and x-ray technologists, and respiratory therapists), physicians (particularly radiologists), nurses and clerical personnel.

Working Conditions

Most radiological technologists work in hospitals or community clinics. Those employed in hospitals may work in a variety of areas (e.g. emergency, operating room, mobile radiography, fluoroscopy, general radiography). Most work shifts and are sometimes on call. Those employed in community clinics work regular office hours but may be required to work some evenings and weekends.

This is a physically demanding occupation. Radiological technologists are on their feet for most of their shift. They may be required to help patients move, handle very heavy equipment, and lift accessory equipment weighing up to 10 kilograms. If a patient is unconscious or otherwise unable to move, technologists ask other health care workers for help moving the patient.

Radiological technologists must follow safety precautions (e.g. wear heavy lead aprons during some procedures).

Personal Characteristics

Radiological technologists need the following characteristics:

- a sense of responsibility and a high degree of integrity
- patience and adaptability
- sensitivity to the needs of ill and injured people
- the ability to put people at ease

- an interest in science and technology
- the ability to think independently and solve problems
- good organizational skills.

They should enjoy using equipment to perform tasks requiring precision, having procedures and standards for their work, and compiling information for research data and statistics.

Educational Requirements

In Alberta, the following post-secondary institutions offer 21 month diploma programs in medical radiologic technology:

- **Northern Alberta Institute of Technology (NAIT)** in Edmonton
- **Southern Alberta Institute of Technology (SAIT)** in Calgary.

NAIT and SAIT offer a joint co-operative program with participating practicum sites. The entrance requirement is a high school diploma or equivalent with at least 60 per cent in English 30, Math 30 or 31, Pure or Applied Math 30, Physics 30 and one of the following: Biology 30 (recommended), Chemistry 30 or Science 30. Basic word processing, spreadsheet, e-mail and internet program skills are also required.

The last 13 months of the program are spent at sponsoring hospitals and clinics in Alberta under the supervision of registered radiological technologists. During this period, students take distance education courses and periodically return to the institute for class days. They may be scheduled to work clinical rotations that include weekdays, statutory holidays, evenings and weekends.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Other Requirements

(section revised AUGUST 2005)

Under Alberta's Health Professions Act, only registered members of the Alberta College of Medical Diagnostic and Therapeutic Technologists (ACMDTT) may call themselves a Magnetic Resonance Technologist, Nuclear Medicine Technologist, Radiographic Technologist or Radiation Therapist. Registered members provide health services listed in Schedule 12 of the Health Professions Act.

Employment and Advancement

(section revised JANUARY 2006)

Radiological technologists are employed in:

- hospitals
- community clinics
- doctors' offices
- government agencies
- public health agencies
- industrial medical service units.

With experience and additional training, radiological technologists may move into:

- teaching
- information systems
- administration
- specializations (e.g. neuroradiology, cardiac radiology, computed tomography, digital subtraction angiography, bone densitometry or mammography).

Magnetic resonance imaging, ultrasonography and nuclear medicine require completion of other education programs (for more information, see the Diagnostic Medical Sonographer, Magnetic Imaging Technologist and Nuclear Medicine Technologist occupational profiles).

Radiological technologists are part of the larger National Occupational Classification 3215: Medical Radiation Technologists. In Alberta, most people employed in this classification work in the **Health Care and Social Assistance** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Health Care and Social Assistance industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 1,850 Albertans are employed in the Medical Radiation Technologists occupational group which is expected to grow 2.7 to 3.7 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 40 to 70 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since radiological technologists form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for radiological technologists.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans working part-time or full-time in the Radiological Technologists occupational group earned **up to $75,200 a year.** The average salary was **$53,100 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta College of Medical Diagnostic and Therapeutic Technologists (ACMDTT) website: www.acmdtt.com

Canadian Association of Medical Radiation Technologists (CAMRT) website: www.camrt.ca

Health Sciences Association of Alberta (HSAA) website: www.hsaa.ca

Related Occupational Profiles

Canadian Forces Personnel - Non Commissioned
Combined Laboratory and X-Ray Technologist
Dental Assistant
Diagnostic Medical Sonographer
Magnetic Resonance Technologist
Nuclear Medicine Technologist
Radiation Therapist

Related High School Subjects

Community Health; Information Processing; Language Arts; Mathematics; Physical Education; and Science (Biology; Chemistry; and Physics)

Related Post-Secondary Fields of Study

Health Care and Medical Sciences

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Railway Car Mechanic

Produced JUNE 2003

Railway car mechanics inspect, test, maintain, repair and fabricate railway passenger and freight car equipment.

NOC Number(s): 7314
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus below average occupational growth in Alberta
Interests: O M I

Duties

In general, railway car mechanics:

- inspect rail cars coming into the rail yard to identify defects and determine the extent of wear and damage
- repair or replace broken, defective or worn car components such as brake parts, wheels, bearings, pistons, gears and steel parts, ladders and doors.

Railway car mechanics make minor repairs on the spot or send rail cars to the repair shop if major repairs are required.

In rail repair shops, railway car mechanics:

- perform scheduled maintenance and upgrade rail cars
- work from blueprints, shop sketches and instruction manuals to repair, fabricate and install steel or wood fittings
- repair and install parts such as air valves, bearings, air cylinders and piping
- use test gauges to test and adjust parts
- paint car exteriors and interiors.

Sometimes the cars in need of repair are not owned by the railway company that makes the repairs. When this occurs, mechanics must do the paperwork required to invoice the other railway company for repair services.

Working Conditions

Railway car mechanics are required to work on top of and under equipment, often in confined areas. They work indoors in shops and outdoors in all weather conditions. The working environment is often noisy, dusty and dirty. Lifting up to 25 kilograms is required.

In Alberta, Canadian Pacific Railway has a repair shop in Calgary and Canadian National Railway has a shop in Edmonton. Since railway yards operate 24 hours a day, seven days a week, mechanics must work shifts. Some overtime work may be required.

Personal Characteristics

Railway car mechanics need the following characteristics:

- an aptitude for mechanical work
- an aptitude for mathematics
- an interest in electrical work, welding and steel fabrication
- excellent manual dexterity
- good vision
- good hearing.

They should enjoy:

- using tools, equipment and machinery to perform tasks requiring precision
- having clear rules and organized methods for their work
- trouble-shooting problems.

Educational Requirements

Railway car mechanics must successfully complete **an internal three to four year apprenticeship program** offered by railway companies. Employers prefer to hire high school graduates who have a valid driver's licence. Applicants for railway car mechanic apprentice positions may be asked to:

- write aptitude tests that assess their ability to follow instructions and their mechanical and mathematical abilities
- take a medical examination
- pass a performance test.

Welding experience and the ability to read and create blueprint printouts and diagrams are definite assets.

Mechanic apprentices first attend classroom training programs, then rotate jobs working with different journeymen railway car mechanics, and periodically return to the classroom for training in areas such as railway welding. They are gradually given more and more responsibility.

Employment and Advancement

(section revised JANUARY 2006)

Railway car mechanics are employed by railway companies. Prospective apprentices are often recruited from among current railway employees.

Car mechanics may advance to supervisory positions and later to management positions. It is possible for car mechanics to change employers, but this occupation is unique to the rail industry and few railway car mechanics transfer their skills to other industries.

Railway car mechanics are part of the larger National Occupational Classification 7314: Railway Carmen/women. In Alberta, most people employed in this classification work in the **Transportation and Warehousing** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Transportation and Warehousing industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 500 Albertans are employed in the Railway Carmen/women occupational group which is expected to grow 0.8 to 1.8 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

In 2001, most Albertans in the Railway Carmen/women occupational group earned from **$24,900 to $49,000 per year** (2001 Alberta Wage and Salary Survey).

Other Sources of Information

(section revised JUNE 2005)

Careers in Transportation website: www.transpocity.ca

Related Occupational Profiles

Heavy Equipment Technician
Transport Refrigeration Technician

Related High School Subjects

Electro-Technologies; Fabrication Studies; Mathematics; Mechanics; and Physical Education

Related Post-Secondary Fields of Study

Trades, Industrial and Related Training

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Real Estate Agent

Produced DECEMBER 2005

Real estate agents sell, lease and rent houses, apartments, commercial buildings, land and other real estate for clients on a commission basis.

NOC Number(s): 6232
Minimum Education: High school diploma
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **S M d**

Duties

Most real estate agents represent people who are involved in the sale or purchase of residential properties such as houses and condominiums. Experienced real estate agents may specialize in selling or leasing commercial, industrial, agricultural or other types of real estate.

Each specialty requires knowledge of the particular type of real estate and the local market for it. For example, residential real estate agents must be familiar with local zoning and building restrictions, property taxes, municipal plans for land development and financing options for buyers.

In general, real estate agents:

- view property listings to become familiar with market conditions; research properties; attend seminars, conventions and courses and read trade journals and other materials to keep informed about market conditions
- solicit property sales listings by contacting owners directly (by telephone or in person) and advertising their services
- assist sellers by establishing fair market asking prices for their properties, advertising properties, listing properties and conducting open houses
- assist buyers by showing properties and discussing terms of the sale with them
- advise clients on market conditions, prices, legal requirements and related matters
- draw up sales/rental agreements and related documents in consultation with clients
- ensure that any special terms and conditions stated in agreements are carried out before the closing dates.

Working Conditions

Working conditions for real estate agents vary. Although they generally work in offices, they spend a great deal of time outside the office showing properties to customers, meeting people, researching the market and performing related activities. Evening and weekend work is required. Most real estate agents work long hours and are virtually always on call.

Personal Characteristics

Real estate agents need the following characteristics:

- the energy and stamina required to work long hours
- maturity, tact and enthusiasm for their work
- an outgoing personality
- perseverance
- good organizational and communication skills
- good problem-solving skills
- a good memory for names, faces and business details
- the ability to imagine how a property could be used to best advantage
- personal financial management skills.

They should enjoy helping people find appropriate homes, taking a methodical approach to compiling information, and working independently in a highly competitive field.

Educational Requirements

In Alberta, real estate agents must:

- be at least 18 years of age
- have a Canadian high school diploma or equivalent
- complete a pre-licensing course
- score at least 70 per cent on a provincial qualifying exam
- obtain an employment offer from a brokerage and authorization from the **Real Estate Council of Alberta**.

Real estate brokers must:

- successfully complete the Real Estate Agent's Program or equivalent
- successfully complete the Real Estate Broker's Program offered by the **Alberta Real Estate Association**
- have at least two years of industry expereince as an agent in the past five years
- score at least 70 per cent on the provincial qualifying exam for brokers.

The required courses may be taken by distance education through the Alberta Real Estate Association or by classroom instruction. Classroom instruction is offered by real estate boards throughout the province at local post-secondary institutions, and by the **Real Estate Training Institute** in Edmonton. Applicants must have a high school diploma or equivalent education. Computer knowledge is required.

Membership in a local Real Estate Board may be required to access related services.

Other Requirements

Real Estate Agent and Real Estate Broker are protected titles under Alberta's Real Estate Act and associated regulations. This means that to call yourself a Real Estate Agent or Real Estate Broker, you must satisfy requirements set by the Real Estate Council of Alberta (RECA).

Employment and Advancement

(section revised JANUARY 2006)

Real estate agents are independent business people who work under the supervision of licensed real estate brokers. Real estate is sold everywhere in the province but most real estate offices are located in regional centres.

Real estate sales is a very competitive business. Many of the people who enter this occupation each year leave within two years.

Experienced real estate agents in large firms may advance to management positions or specialize in particular aspects of real estate such as property management.

Real estate agents are part of the larger National Occupational Classification 6232: Real Estate Agents and Salespersons. In Alberta, most people employed in this classification work in the **Finance, Insurance and Real Estate** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment in the Finance, Insurance and Real Estate industry (especially changes that affect the housing market)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 6,900 Albertans are employed in the Real Estate Agents and Salespersons occupational group which is expected to grow 1.5 to 2.5 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 100 to 180 **new** positions will be created each year **in addition** to job openings created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Real estate agents are self-employed. They work on a commission basis and must pay expenses from their gross commissions. Licensed real estate brokers may provide office space, supplies and clerical support on a fee for service basis.

Earnings vary greatly from month to month and from one agent to another. Top selling agents earn most of the total earnings for all real estate agents.

According to the **2005 Alberta Wage and Salary Survey**, part-time or full-time **starting** salaries for Albertans working in the Real Estate Agents and Salespersons occupational group ranged from **$13,000 to $90,300 a year.**

Other Sources of Information

Alberta Real Estate Association website: www.abrea.ab.ca

Real Estate Council of Alberta (RECA) website: www.reca.ca

Real Estate Institute of Canada website: www.reic.ca

Real Estate Training Institute website: www.reticanada.com

Related Occupational Profiles

Insurance Agent/Broker
Land Agent
Mortgage Agent
Real Estate Appraiser
Retail Salesperson

Related High School Subjects

Communication Technology; Financial Management; Information Processing; Language Arts; Legal Studies; Management and Marketing; Mathematics; and Social Studies

Related Post-Secondary Fields of Study

Personal and Food Services

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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OCC info Alberta Occupational Profiles

Alberta Human Resources and Employment

Real Estate Appraiser

Produced JANUARY 2006

Real estate appraisers estimate the value of vacant and improved residential, commercial, industrial, agricultural and other real estate.

NOC Number(s): 1235.3
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus below average occupational growth in Alberta
Interests: **M d s**

Duties

A real estate appraisal may be required when a property is bought, sold, mortgaged, insured, damaged, invested in, expropriated, divided up in a court settlement or assessed for taxation.

Real estate appraisers thoroughly investigate and inspect a property before preparing a report. Conducting an appraisal may involve:

- reading blueprints and mechanical drawings
- checking building codes and zoning bylaws
- checking the legal description of the property
- looking at the type and location of nearby services such as shopping centres, schools, parks, municipal infrastructure (for example, gas lines, sewer) and other features of the neighbourhood
- recognizing good and bad construction materials and workmanship
- estimating the value of property through sales comparisons, cost of replacement and income potential
- researching public records and court documents
- considering general values of real estate in the area, taxes and special assessments
- looking at current market trends in real estate.

Real estate appraisers may specialize in residential properties, commercial or industrial properties, or agricultural or forested lands.

Working Conditions

Appraisal work is generally done during weekday office hours but evening and weekend work is often required. Self-employed appraisers set their own hours.

Some property appraisals involve a certain amount of physical activity in the inspection phase (for example, inspecting foundations). Travel may be required to view rural property, industrial sites or timberland.

Personal Characteristics

Appraisers need the following characteristics:

- good communication skills in person and in writing
- patience and flexibility to work with people from a wide range of backgrounds
- strong spatial and mathematical perception to judge the size and layout of a room
- confidence in their judgements and decisions
- honesty and integrity
- the ability to work under pressure.

They should enjoy analyzing information and taking a methodical approach to their work, making decisions and dealing with people.

Educational Requirements

The **Appraisal Institute of Canada (AIC)** offers two professional designations for real estate appraisers: Canadian Residential Appraiser (CRA) and Accredited Appraiser Canadian Institute (AACI).

- CRAs are qualified to appraise individual undeveloped residential dwelling sites and dwellings containing not more than four self-contained family housing units.
- AACIs are fully accredited to appraise a wide range of property.

To qualify for either designation, prospective appraisers must:

- meet current admission requirements (which include pre-requisites that are subject to change)
- successfully complete the Institute's education program and one or more demonstration appraisal reports
- locate a suitable mentor and meet Applied Experience Program requirements (100 days for the CRA designation; 200 days for the AACI desgination)
- successfully complete a final oral examination.

Current applicants for the AACI and CRA designations must have a degree from an accredited university (this is a designation requirement, not an admission requirement).

Athabasca University and the **University of British Columbia** offer the Appraisal Institute of Canada's education program via distance education. Graduates must complete additional coursework before applying to the University of British Columbia for credit toward the CRA or AACI designation.

In Alberta, **Lakeland College** in Vermilion offers a two year Appraisal and Assessment diploma program. The entrance requirement is a high school diploma or equivalent with at least 50 per cent in English Language Arts 30-1 (or English 30, or 65 per cent in ELA 30-2 or English 33) and 55 per cent in Pure Math 30 (or Math 30, or 65 per cent in Applied Math 30 or Math 33). Pure Math 30 is recommended. Graduates of this program may contact the University of British Columbia to gain credit towards the CRA designation.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

Real estate appraisers are employed by:

- private appraisal companies
- mortgage investment firms
- banks and other lending institutions
- real estate and insurance companies
- government agencies
- municipal assessment offices.

Real estate appraisers often begin as trainees with private appraisal firms, lending institutions or government agencies. Many real estate appraisers work in private practice either alone or with a few other appraisers.

Experienced appraisers may advance to supervisory and management positions, or start their own businesses. Or they may move into mortgage lending, corporate real estate, property assessment or real estate investment analysis.

Real estate appraisers are part of the larger National Occupational Classification 1235: Assessors, Valuators and Appraisers. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Finance, Insurance and Real Estate**
- **Public Administration**
- **Professional and Technical Services**.

The employment outlook in this occupation will be influenced by a wide variety of factors including

- trends and **events** affecting overall employment (especially in the industries listed above),
- **location** in Alberta,
- **employment turnover** (work opportunities generated by people leaving existing positions),
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before), and
- **size of the occupation.**

Over 1,350 Albertans are employed in the Assessors, Valuators and Appraisers occupational group which is expected to grow 0.5 to 1.5 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover. (**Note**: Since real estate appraisers form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for real estate appraisers.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Appraisers' earnings vary considerably depending on their experience and qualifications. Self-employed appraisers charge a fee for each appraisal based on the time it takes to do the appraisal, the distance travelled and the type of report required.

According to the **2005 Alberta Wage and Salary Survey**, Albertans working part-time or full-time in the Appraisers occupational group earned **up to $136,700 a year.** The average salary was **$52,900 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Association of the Appraisal Institute of Canada website: www.appraisal.ab.ca

Appraisal Institute of Canada website: aicanada.ca

Related Occupational Profiles

Assessor
Land Agent
Personal Property/Equipment Appraiser
Real Estate Agent

Related High School Subjects

Construction Technologies; Design Studies; Information Processing; Language Arts; Languages (other than English); Mathematics; and Physical Education

Related Post-Secondary Fields of Study

Business, Management and Administrative Studies

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Receptionist

Produced OCTOBER 2005

Receptionists provide a vital link between customers or clients and an organization's staff and services.

NOC Number(s): 1414.1
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus below average occupational growth in Alberta
Interests: **S M d**

Duties

Duties vary from one position to another but, in general, receptionists:

- greet people entering offices, hospitals and other establishments, answer questions and direct visitors to the appropriate people or services
- answer, screen and forward telephone calls
- take messages and provide information
- schedule appointments
- maintain a current record of staff members' whereabouts
- accept messenger and courier deliveries
- perform other clerical duties such as word processing, compiling and recording data, maintaining files and inventories, operating office equipment, sorting mail, stuffing envelopes or proofreading.

In hospitals, medical clinics and veterinary clinics, receptionists also obtain information from patients or animal owners, direct people to the appropriate treatment areas, and keep admission records.

Working Conditions

Many receptionists work regular office hours. Evening and weekend work is required in hospitals and other establishments that are open for extended hours. Working with people and answering telephones can be hectic and stressful.

Personal Characteristics

Receptionists need the following characteristics:

- good verbal and written communication skills
- good listening skills
- a friendly, outgoing personality
- tact and the ability to stay calm during busy periods and when callers are persistent or rude
- good organizational skills
- a genuine interest in people and in helping others
- the desire and ability to work with little supervision when dealing with routine matters.

Educational Requirements

Receptionists need computer experience and knowledge of general office procedures, and exceptional telephone manners. Specific **educational requirements vary a great deal**, depending on the employer. Most employers prefer to hire job candidates who have at least a high school diploma, plus related training or experience dealing with the public.

In Alberta, many colleges, technical institutes and private vocational schools offer programs related to office administration. For a listing, see the Administrative Assistant occupational profile. The following institutions offer programs designed for reception work in general or in specific types of offices. Prospective students should investigate the suitability and reputation of training programs with employers before enrolling in a program.

- **Academy of Learning**, a private vocational school in Airdrie, Calgary, Edmonton, High River and Red Deer, offers a 44 week Medical Office Assistant program and a 51 week Medical Office Assistant with Veterinary Specialty program. The entrance requirement is a high school diploma or equivalent. The Verterinary Specialty requires Grade 10 math.
- **Alberta Career Computer Center Inc.**, a private vocational school in Edmonton, offers a 26 week Medical Office Administration program. The entrance requirement is a high school diploma with Math 10 or any Grade 11 math, or equivalent.
- **Bow Valley College** in Calgary offers a 21 week Dental Business Assistant certificate program and a 22 week Medical Office Assistant program. The entrance requirement for both programs is at least three Grade 11 subjects including English 20 or 23 or equivalent, and typing speed of 20 words per minute. The College also offers a 16 week Hospital Admitting Clerk program.
- The **CDI College of Business, Technology and Healthcare**, a private vocational school, offers a 36 week Medical Administrative Assistant program in Calgary and Edmonton and a 35 week Dental Business Administration program in Edmonton. The entrance requirement for both programs is a high school diploma or equivalent.
- **Columbia College**, a private vocational school in Calgary, offers a 16 week Dental Business Administration program and a 20 week Medical Administration/Clinical Assistant program. The entrance requirement for both programs is Grade 12 or equivalent education.
- **HCC Choice College**, a private vocational school in Spruce Grove, offers a 25-week Medical Clinical Assistant program. The entrance requirement is a high school diploma with Math 10 or any Grade 11 math or equivalent.
- **Lakeland College** offers a Veterinary Medical Receptionist program in Lloydminster and Sherwood Park. The entrance requirement is a high school diploma with at least 50 per cent in English Language Arts 30-1 (or English 30, or 65 per cent in ELA 30-2 or English 33), Pure Math 20 (or Math 20, Applied Math 30 or Math 33), and oen of the following: Biology 20, Chemistry 20, Physics 20 or Science 20.
- **Mann Career Training Ltd.**., a private vocational school in Spruce View, offers a Medical Office Receptionist correspondence program. Contact the company for more information.
- **Medical Reception College Ltd.**, a private vocational school in Calgary and Edmonton, offers a six week Medical Receptionist Training course. The entrance requirement is a high school diploma with a Grade 10 English or equivalent.
- **Network Learning Masters** in Edmonton offers a 20-week Office Professional program. The entrance requirement is an Alberta high school diploma with English 10 or equivalent.
- **NorQuest College** in Edmonton offers a 21 week Dental Business Assistant program. Entrance requirements include 60 per cent in English Language Arts 30-1 or English 30 (or 65 per cent in ELA 30-2 or English 33), a net keyboarding speed of 20 words per minute, a clear criminal record check and an admission interview.
- **Northern Alberta Institute of Technology (NAIT)** offers a one year Veterinary Administrative Assistant program and 32 week Office Admininstration certificate program at its St. Albert campus. The entrance requirement is a high school diploma with English 30 or 33 and Pure or Applied Math 20 (or Math 23), or equivalent.
- **Olds College** offers a one year Veterinary Medical Receptionist certificate program. The entrance requirement is a high school diploma with English Language Arts 30-1 (or 30-2 or English 30 or 33), Pure or Applied Math 20 (or Math 20 or 23) and Biology 20.
- **Reeves College**, a private vocational school in Edmonton and Lloydminster, offers a 33 week Medical Office Assistant program. The entrance requirement is a high school diploma with Grade 12 English and math, or equivalent.
- **Slate Training Centre**, a private vocational school in Edmonton, offers a 27 week Dental Administrative Assistant program. The entrance requirement is a high school diploma or equivalent.
- The **Southern Alberta Institute of Technology (SAIT)** offers a five month Health Information Office Assistant certificate program. The entrance requirement is a high school diploma or equivalent with 60 per cent in English Language Arts 30-1 (or ELA 30-2 or English 30 or 33) and Biology 30.
- **Trend College** in Edmonton offers a 39 week Veterinary Office Receptionist program. Contact the company for more information.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

(section revised JANUARY 2006)

Receptionists are employed in:

- banks
- universities and colleges
- law firms
- government departments
- medical and dental offices
- hospitals
- real estate and insurance offices
- small and large businesses.

Some positions are part-time.

The introduction of automated office equipment such as computers has not changed the nature of the work (communication with people) but increasing use of voice-mail and e-mail in many offices may reduce the number of jobs in which telephone answering is a major component of the work.

Receptionists are part of the larger National Occupational Classification 1414: Receptionists and Switchboard Operators. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Health Care and Social Assistance**
- **Repair, Maintenance, Personal and Other Services**
- **Professional and Technical Services**
- **Finance, Insurance and Real Estate**
- **Retail Trade**
- **Management, Administrative and Other Support Services**
- **Information, Culture and Recreation**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation**.

About 10,050 Albertans are employed in the Receptionists and Switchboard Operators occupational group which is expected to grow 0.6 to 1.6 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 60 to 160 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since receptionists form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for receptionists.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Salaries vary a great deal depending on the receptionist's qualifications and the responsibilities involved.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Receptionists and Switchboard Operators occupational group working part-time or full-time earned from **$10,600 to $64,900 a year.** The average salary was **$26,000 a year**.

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Related Occupational Profiles

Administrative Assistant
Health Information Management Professional
Hotel and Motel Desk Clerk

Related High School Subjects

Information Processing; Language Arts; and Management and Marketing

Related Post-Secondary Fields of Study

Clerical and Administrative Support

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Recording/Sound Engineer

Produced MAY 2003

Recording and sound engineers use a variety of techniques and electronic equipment to record, mix, process, manipulate and edit sound.

NOC Number(s): 5225
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: O M I

Duties

Recording engineers work in recording studios, film post-production houses, radio stations, multi-media companies and on film sets. Most sound recordings are made on multi-track tape recorders (4, 8, 16 or 24 track machines), digital audio work stations or hard disc based computers/samplers.

In general, recording engineers:

- operate recording consoles or computers, tape machines, microphones and sound processing equipment to change the signals from microphone or line inputs to usable audio signals that can be sent to multi-track recording machines or digital audio processors.
- mix, combine or edit recordings to create master tapes for commercials, film soundtracks, CDs, computer audio files (wave files) or multi-media presentations for later broadcast or retail sale.
- do audio post-production mixing and editing for film/video work.
- create MIDI (musical instrument digital interface) programs for music projects, commercials or film post-production.

Recording engineers record separate instruments, vocals and sounds, and combine them later during the mixing or post-production stage. They work closely with producers, directors, arrangers, programmers and performers to achieve the desired sound for musical recordings, commercials and film, television, theatre and radio productions.

Sound (live) engineers mix the sound produced during live performances to produce:

- the sound that audiences hear coming through the main speakers
- what performers hear through earphones or monitors facing the performers (their own voice or instruments, whichever they prefer).

Sound engineers work at a mixing console and are often responsible for setting up and tearing down the entire sound system.

The work that recording engineers and live sound engineers do is based on the same principles and there is some cross-over between the two occupations. However, studios are accoustically stable environments. The venues for live performances are more challenging.

Analog recording is still used in recording studios, radio stations and some post-production studios, but most recordings use SMPTE (Society of Motion Picture and Television Engineers) or MIDI time code for synchronization. Recording is increasingly becoming computerized. Computers allow recording and sound engineers to work in a non-destructive format, work faster and more efficiently, and collaborate with others in locations throughout the world.

Working Conditions

Recording and sound engineers may be required to work long hours in a studio or on a film set to meet project deadlines. Sound engineers often spend a lot of time travelling.

Personal Characteristics

Recording and sound engineers need the following characteristics:

- patience, understanding and flexibility
- the ability to think logically and pay attention to details
- the stamina required to work long hours
- a good ear for musical pitch and tone
- good communication skills to clarify what sounds are desired, make suggestions and accept criticism
- the ability to deal with a variety of personal musical styles and to work as part of a team
- quick thinking and decision-making abilities to solve problems as they arise.

They should enjoy using electronic equipment to perform tasks requiring precision and trouble-shooting problems.

Educational Requirements

Although a related post-secondary certificate or diploma is an asset when seeking employment, there are **no formal education requirements** for recording and sound engineers. Most recording and sound engineers have acquired a working knowledge of today's computer-based recording technologies (e.g. digital mixing, random access editing) and the ability to adapt quickly to many different recording formats and devices by **learning on the job or taking related courses**. Sound engineers in particular must be very versatile and able to work in many different circumstances.

An understanding of music theory and harmony is an asset for those who work on music projects. For information about post-secondary music programs in Alberta, see the Instrumental Musician occupational profile.

For information about post-secondary programs related to broadcasting, see the Television Audio/Video Operator profile.

Training to become a recording/sound engineer is very specialized and a relative few private vocational schools in Canada offer it. Occasionally, colleges, technical institutes and electronic music stores offer evening courses or short seminars in sound recording. Aspiring recording and sound engineers should discuss their career plans with people and employers in the industry before enrolling in a training program.

Employment and Advancement

(section revised JANUARY 2006)

It can be difficult to break into the recording engineering business. Experience working on a practicum placement through a school training program or as a volunteer at a cable television station is an asset. Beginning in radio commercial production is another option.

It is common in the industry for someone to start out as a "gopher" or assistant engineer, and work their way up. You must be willing to work for little money to gain practical experience and establish a reputation for good work.

Recording and sound engineers work for:

- live sound re-enforcement companies
- video and film production companies
- multi-media companies
- television and radio stations
- clubs
- bands
- theatre and dance companies
- recording studios.

Some freelance recording engineers set up their own basement or project recording studios.

Experienced studio recording engineers may advance to producer positions.

Recording/sound engineers are part of the larger National Occupational Classification 5225: Audio and Video Recording Technicians. In Alberta, over 75 per cent of people employed in this classification work in the **Information, Culture and Recreation** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Information, Culture and Recreation industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)

- **size of the occupation.**

Over 850 Albertans are employed in the Audio and Video Recording Technicians occupational group which is expected to grow 1.7 to 2.7 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 10 to 30 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since recording/sound engineers form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for recording/sound engineers.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Audio and Video Recording Technicians occupational group working part-time or full-time earned from **$21,500 to $58,600 a year.** The average salary was **$39,200 a year.**

Other Sources of Information

Alberta Recording Industry Association website: www.aria.ab.ca

Canadian Independent Record Production Association website: www.cirpa.ca

Society of Motion Picture and Television Engineers website: www.smpte.org

Related Occupational Profiles

Lighting Technician
Television Audio/Video Operator

Related High School Subjects

Fine Arts (Drama; and Music); Information Processing; Language Arts; and Mathematics

Related Post-Secondary Fields of Study

Communications; and Fine Arts and Performing Arts

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Recreation and Sport Administrator

Produced MARCH 2005

Recreation and sport administrators plan, organize and direct sport and recreation programs and services in accordance with policies set by management, owners, boards of directors or executive committees.

NOC Number(s): 0513
Minimum Education: 4 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **D M I**

Duties

In general, recreation and sport administrators:

- develop and recommend overall recreation strategies, plans and policies
- implement policies
- act as a liaison for boards, committees and community organizations
- organize and co-ordinate recreation programs and educational events
- plan regional, provincial, national and international sporting events
- assist community organizations in planning and administration, and facilitate the delivery of their programs and services
- initiate and oversee fund raising activities
- manage or oversee recreational and sport facilities such as arenas, curling rinks, swimming pools and golf courses
- establish yearly budgets for equipment, staffing and facility maintenance and repair
- advertise programs and services
- train and supervise staff
- write reports
- co-ordinate volunteer groups.

Working Conditions

Recreation and sport administrators meet and work with many people including municipality representatives and people who use recreation facilities. They perform administrative tasks in an office environment but meetings, recreation and sport activities may take them to a variety of locations. Some travel and evening or weekend work may be required.

Personal Characteristics

Recreation and sport administrators need the following characteristics:

- an interest in recreation and sports, and in working with people from diverse backgrounds
- excellent interpersonal skills
- good written and oral communication skills
- strong planning, organization and leadership skills
- the ability to be creative and adapt to change.

They should enjoy co-ordinating information and the work of others, negotiating business contracts and administering programs, and solving problems.

Educational Requirements

Most recreation and sport administrators have **a university degree in a related discipline** such as recreation, physical education or management. Students are strongly advised to become involved as recreation leaders during their post-secondary training. A broad range of experience in a number of different recreation programs is recommended.

In Alberta, the following institutions offer degree programs related to recreation and sport administration:

- **Mount Royal College** in Calgary offers a four year applied degree in Ecotourism and Outdoor Leadership. The entrance requirement is a high school diploma with an average of at least 60 per cent in English Language Arts 30-1 and Biology 30 (Social Studies 30 recommended).
- The **University of Alberta** in offers Bachelor of Physical Education programs in Edmonton and Camrose, and a four year Bachelor of Arts program in recreation, sport and tourism in Edmonton. The entrance requirement is an average of 65 to 80 per cent in English 30, at least one 30-level science (Biology 30 recommended) and three other approved high school subjects in specified categories (Social Studies 30 recommended).
- The **University of Lethbridge** offers four year and five year combined degree programs in physical education. The entrance requirement is an average of at least 65 per cent in English 30 and three other appropriate 30 level subjects, plus a fifth Grade 12 subject. Chemistry 30, Biology 30 and Pure Math 30 may be required for B.Sc. degree programs.

Post-secondary institutions throughout Alberta offer university transfer programs that allow students to apply up to two years of study toward university bachelor's degree programs. It is the student's responsibility to ensure that the courses they choose to take will be accepted for credit at the institution to which they wish to transfer.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

(section revised JANUARY 2006)

Recreation and sport administrators are employed by:

- provincial sports and recreation associations
- municipal, provincial and federal governments
- non-profit organizations such as the YMCA, YWCA, and Boys and Girls Clubs
- post-secondary institutions
- hospitals and extended care centres
- private clubs
- tourism and entertainment businesses and organizations.

Employment in smaller communities offers a chance to work with minimal supervision; however, budgets are smaller and opportunities for advancement may be limited. Larger cities usually have greater diversity and offer a broader range of experience.

Recreation and sport administrators are part of the larger National Occupational Classification 0513: Recreation and Sports Program and Service Directors. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Information, Culture and Recreation**
- **Public Administration**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 650 Albertans are employed in the Recreation and Sports Program and Service Directors occupational group which is expected to grow 1.1 to 2.1 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover. (**Note**: Since recreation and sport administrators form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for recreation and sport administrators.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised SEPTEMBER 2005)

Salary ranges vary greatly depending on the employer (government, non-profit organization or private organization) and type of location (smaller centre, major city).

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Recreation and Sport Program and Service Directors occupational group working part-time or full-time earned from **$12,100 to $108,800 a year.** The average salary was **$50,300 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Related Occupational Profiles

Fitness Instructor
Management Consultant
Recreation Co-ordinator/Supervisor
Recreation Facility Operator
Sports Instructor
Volunteer Manager

Related High School Subjects

Enterprise and Innovation; Language Arts; Languages (other than English); Management and Marketing; Mathematics; Physical Education; Science (Biology; and Chemistry); and Social Studies

Related Post-Secondary Fields of Study

Business, Management and Administrative Studies; and Physical Education and Recreation

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For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Recreation Co-ordinator/Supervisor

Produced MARCH 2005

Recreation co-ordinators administer and oversee recreation programs and leisure services.

NOC Number(s): 4167.5
Minimum Education: 2 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: S D I

Duties

Recreation co-ordinators plan, organize, supervise and evaluate recreation programs, and advise groups and organizations regarding recreational programming. They are involved in many aspects of recreation including:

- leadership training
- sporting, cultural and physical fitness activities
- outdoor recreation
- parks management
- recreation for special populations.

In general, recreation co-ordinators:

- plan and implement programs and services based on community needs
- work with community organizations in program development and implementation
- advertise programs
- implement fund-raising projects
- conduct research and program evaluations
- prepare budgets for departments, facilities or individual programs
- prepare grant applications, write reports and develop long range plans
- interview, hire, supervise and train staff and volunteers who operate various courses, programs and facilities.

Working Conditions

Recreation co-ordinators generally work in an office environment but may be required to work some evenings and weekends to attend meetings and events. Travel also may be required especially if co-ordinators are responsible for programs in two or three locations.

Setting up recreational activities sometimes requires lifting up to 25 kilograms.

Personal Characteristics

Recreation co-ordinators need the following characteristics:

- good oral and written communication skills
- the ability to establish rapport with people of all ages and backgrounds
- strong organizational and leadership skills.

They should enjoy consulting with people, directing and co-ordinating programs, and developing innovative programs.

Educational Requirements

(section revised JULY 2005)

Recreation co-ordinators and supervisors must have **a university degree or college diploma** in a related discipline such as recreation, physical education or management. Most employers prefer to hire university graduates whose studies were directly related to recreation or who have experience in the recreation field. Some positions require an understanding of community development principles and the ability to organize community-wide festivals and special events.

In Alberta, the following institutions offer related diploma and degree programs:

- **Grande Prairie Regional College** offers a two year diploma in Fitness Leadership. The entrance requirement is an average of at least 60 per cent in English Language Arts 30-1, two humanities or science subjects, one science and one other 30 level subject (not more than one language other than English).
- **Lethbridge Community College** offers a two year Therapeutic Recreation - Gerontology diploma program. The entrance requirement is a high school diploma with at least 65 per cent in English 30 or 33, and Biology 30.
- **Mount Royal College** in Calgary offers a four year applied degree in Ecotourism and Outdoor Leadership. The entrance requirement is a high school diploma with an average of at least 60 per cent in English Language Arts 30-1 and Biology 30 (Social Studies 30 recommended).
- The **Northern Alberta Institute of Technology** in Edmonton offers a two year Personal Fitness Trainer diploma program. The entrance requirement is a high school diploma with English 30 or 33, a 30 level science (Biology 30 recommended) and Pure or Applied Math 20.
- The **University of Alberta** in offers Bachelor of Physical Education programs in Edmonton and Camrose, and a four year Bachelor of Arts program in recreation, sport and tourism in Edmonton. The entrance requirement is an average of 65 to 80 per cent in English 30, at least one 30-level science (Biology 30 recommended) and three other approved high school subjects in specified categories (Social Studies 30 recommended).
- The **University of Lethbridge** offers four year and five year combined degree programs in physical education. The entrance requirement is an average of at least 65 per cent in English 30 and three other appropriate 30 level subjects, plus a fifth Grade 12 subject. Chemistry 30, Biology 30 and Pure Math 30 may be required for B.Sc. degree programs.

Post-secondary institutions throughout Alberta offer university transfer programs that allow students to apply up to two years of study toward university bachelor's degree programs. It is the student's responsibility to ensure that the courses they choose to take will be accepted for credit at the institution to which they wish to transfer.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

(section revised JANUARY 2006)

Recreation co-ordinators are employed by:

- municipal governments
- private recreation and fitness facilities
- tourism and entertainment businesses and organizations
- health care institutions
- post-secondary education institutions
- non-profit sport and recreation associations (e.g. YMCA, YWCA, Boys and Girls Clubs).

Employment in smaller centres may offer a broader range of experience. Larger centres usually have greater program diversity and offer opportunities for specialization.

Experienced co-ordinators may move into consulting positions or administrative positions (for more information, see the Recreation and Sport Administrator occupational profile).

Recreation co-ordinator/supervisors are part of the National Occupational Classification (NOC) 4167: Recreation, Sports and Fitness Program Supervisors and Consultants. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Public Administration**
- **Health Care and Social Assistance**
- **Information, Culture and Recreation**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 1,300 Albertans are employed in the Recreation, Sports and Fitness Program Supervisors and Consultants occupational group which is expected to grow 2.0 to 3.0 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 20 to 40 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since recreation co-ordinator/supervisors form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for recreation co-ordinator/supervisors.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Salaries for recreation co-ordinators vary depending on location, the responsibilities of the position and the co-ordinator's qualifications.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Recreation, Sports and Fitness Program Supervisors and Consultants occupational group working part-time or full-time earned from **$13,700 to $51,500 a year.** The average salary was **$37,100 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Related Occupational Profiles

Fitness Instructor
Human Ecologist
Kinesiologist
Occupational Therapist Assistant
Recreation and Sport Administrator
Recreation Therapist
Sports Instructor

Related High School Subjects

Enterprise and Innovation; Language Arts; Languages (other than English); Management and Marketing; Mathematics; Physical Education; Science (Biology; and Chemistry); Social Studies; and Tourism Studies

Related Post-Secondary Fields of Study

Business, Management and Administrative Studies; and Physical Education and Recreation

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For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Recreation Facility Operator

Produced MARCH 2005

Recreation facility operators maintain and supervise the use of recreational facilities ranging from ice arenas and swimming pools to sports fields and tennis courts.

NOC Number(s): 6671.2
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **M O S**

Duties

Recreation facility operators are responsible for the smooth, safe and efficient operation of recreation facilities such as swimming pools, arenas, curling rinks, indoor courts and outdoor facilities. They are sometimes responsible for programming as well as facility operation and maintenance (for more information, see the Recreation Co-ordinator/Supervisor profile).

Recreation facility operators' duties depend on the type and number of facilities they operate, and their degree of involvement with programming and maintenance. For example, a swimming pool operator may:

- run swimming lesson programs
- be responsible for public relations and planning
- oversee pool administration
- supervise lifeguards
- prepare budgets
- handle cash
- maintain water quality and mechanical operations
- have building maintenance and custodial duties.

In the same community, an ice rink operator may only supervise the rink during hours of operation and maintain the ice surface.

In general, recreation facility operators:

- perform routine maintenance themselves or supervise general maintenance staff and, when required, tradespeople such as painters, plumbers and electricians
- enforce safety regulations
- ensure good public relations
- schedule the use of facilities and collect fees.

In large complexes that may include ice rinks, swimming pools or other facilities, facility operators must ensure the efficient, safe operation of:

- building systems (boilers, plumbing, heating and ventilation systems)
- architectural and structural components (door hardware, paint finishes, floor finishes, furniture, windows, roofing systems, etc.)
- life, fire and safety systems (fire panels, fire extinguishers, concession range hood systems, wet and dry sprinkler systems, first aid stations, etc.)

Working Conditions

Recreation facility operators may work both indoors and outdoors depending on the type of facility. They often work shifts that include evenings, weekends and holidays.

Some recreation facility operators are required to lift materials and equipment weighing up to 25 kilograms.

Personal Characteristics

Recreation facility operators need the following characteristics:

- flexibility and a sense of humour
- a willingness to acquire a broad range of skills
- the ability to work effectively in a team environment
- the ability to work effectively with patrons and clients.

They should enjoy working with people and machines, and having responsibilities that change frequently.

Educational Requirements

In the past, many facility operators have worked their way up but this is becoming increasingly difficult as more specialized skills, training and education are required.

- **Indoor ice arena operators** need to know how to make and maintain artificial ice to a safe and efficient standard, make minor repairs to ventilation and refrigeration systems, and do cutodial work. A minimum Level I Arena Operator's certificate from the Alberta Association of Recreation Facility Personnel is recommended. An AARFP Level II or building maintenance certificate may be required.
- **Swimming pool operators** must know how to operate low pressure boilers and filtration systems, maintain the water and facilities at a level that satisfies health regulations, understand chlorine safety and water testing, and clean facilities. A minimum Level I Swimming Pool Operator's certificate is recommended.
- **Outdoor facility operators** responsible for sports fields, tennis courts, playgrounds and parks have to know about the maintenance of sports fields, playgrounds and courts, irrigation systems, plants and equipment.

The **Alberta Association of Recreation Facility Personnel (AARFP)** offers short courses related to the operation and maintenance of swimming pools, arenas, buildings, parks and sportfields. These courses can be taken in various locations throughout the province. Individuals receive Level I or Level II certification.

Employment and Advancement

(section revised JANUARY 2006)

Most municipalities in Alberta employ facility operations personnel. Some positions (e.g. arena operator, parks operator) are seasonal.

Advancement opportunities depend on the nature of the employing organization and the qualifications of the facility operator.

Recreation facility operators are part of the larger National Occupational Classification 6671: Operators and Attendants in Amusement, Recreation and Sport. In Alberta, most people employed in this classification work in the **Information, Culture and Recreation** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Information, Culture and Recreation industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 2,900 Albertans are employed in the Operators and Attendants in Amusement, Recreation and Sport occupational group which is expected to grow 1.6 to 2.6 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 40 to 80 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since recreation facility operators form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for recreation facility operators.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Operators and Attendants in Amusement, Recreation and Sport occupational group working part-time or full-time earned from **$9,100 to $46,100 a year.** The average salary was **$18,400 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

Alberta Association of Recreation Facility Personnel (AARFP) website: www.aarfp.com

Related Occupational Profiles

Building Operator
Recreation and Sport Administrator
Turfgrass Management Specialist

Related High School Subjects

Community Health; Language Arts; Logistics; Management and Marketing; Mathematics; Physical Education; Science (Chemistry); and Social Studies

Related Post-Secondary Fields of Study

Business, Management and Administrative Studies; Physical Education and Recreation; and Trades, Industrial and Related Training

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For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Recreation Therapist

Produced FEBRUARY 2005

Recreation therapists encourage and promote independent leisure lifestyles for people who have special needs.

NOC Number(s): 3144
Minimum Education: 2 years post-secondary education/training
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: S I M

Duties

Recreation therapists help individuals who have physical, mental, emotional or social limitations to make healthy lifestyle choices and get involved in health-promoting, rewarding leisure activities (e.g. sports, games, arts and crafts, gardening, exercising, dancing, nature study, special events). Appropriate activities assist in the healing process, living well and maintaining health.

Recreation therapy programs are designed to:

- help clients remove barriers that prevent them from participating in meaningful leisure activities
- foster positive attitudes and self-confidence
- help clients acquire new skills
- encourage clients to remain involved in leisure pursuits despite their special needs or circumstances.

Some recreation therapists work as part of health care teams which may include doctors, nurses, nutritionists, psychologists, occupational therapists, physical therapists and other professionals.

In general, recreation therapists:

- assess clients' skills, needs, interests and values relevant to recreation and leisure activity
- adapt activities to clients' special needs, abilities and circumstances
- ensure a safe place and appropriate transportation, equipment and materials for participation in activities
- encourage clients to make decisions about pursuing leisure activities and set personal goals for participation
- chart the progress or difficulties of each client and report to the treatment team
- teach clients about the physical, mental, social and emotional benefits of participating in recreational activities
- work with clients to identify personal leisure barriers and design interventions to address these barriers
- attend rehabilitation team meetings and professional development events.

Working Conditions

This work may involve fairly strenuous physical activity and can be stressful when clients take a long time to choose to participate in leisure activities. Willingness to participate in leisure activities is often influenced by a client's physical, emotional and mental health. However, recreation therapy is crucial to individual rehabilitation and can be very rewarding.

Personal Characteristics

Recreation therapists need the following characteristics:

- excellent interpersonal communication skills
- enthusiasm and a positive, flexible attitude
- organizational skills for planning and co-ordinating events
- the ability to work independently and as part of a team.

They should enjoy working with people, developing and implementing innovative programs, and using specially designed equipment and techniques.

Educational Requirements

(section revised APRIL 2005)

The minimum education requirement is **a degree or diploma in recreation with a specialization in therapeutic recreation**. In Alberta, the following post-secondary institutions offer related programs:

- **Lethbridge Community College** offers a two year diploma program in Therapeutic Recreation (Gerontology). The entrance requirement is a high school diploma with an average of at least 65 per cent in English 30 or 33, or equivalent, and at 50 per cent in Biology 30.
- The **University of Alberta** in Edmonton offers a four year Bachelor of Arts (BA) degree in Recreation, Sport and Tourism with a specialization in recreation/leisure for special populations. The entrance requirement is at least 60 per cent in English 30 and four other approved 30 level subjects (Biology 30 and Social Studies 30 are recommended). Admission is competitive so a high average is often required to gain admission.

Post-secondary institutions throughout the province offer university transfer programs that allow students to apply up to two years of study toward university bachelor's degree programs. It is the student's responsibility to ensure that the courses they choose will be accepted for credit at the institution to which they wish to transfer.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

(section revised JANUARY 2006)

Recreation therapists are employed in a variety of settings:

- hospitals, continuing care and residential care facilities
- prisons and correctional centres
- private and government recreation centres
- community programs
- mental health centres
- group homes
- private community-based agencies.

Advancement opportunities vary depending on the organization and the therapist's academic qualifications.

Recreation therapists are part of the larger National Occupational Classification 3144: Other Professional Occupations in Therapy and Assessment. In Alberta, over 75 per cent of people employed in this classification work in the **Health Care and Social Assistance** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Health Care and Social Assistance industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 750 Albertans are employed in the Other Professional Occupations in Therapy and Assessment occupational group which is expected to grow 2.5 to 3.5 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 10 to 30 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since recreation therapists form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for recreation therapists.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Other Professional Occupations in Therapy and Assessment occupational group working part-time or full-time earned from **$21,400 to $78,500 a year.** The average salary was **$38,700 a year.**

For information about current collective agreements in the public and not-for-profit sectors, see the Health Sciences Association of Alberta (HSAA) website.

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Therapeutic Recreation Association website: www.alberta-tr.org

Canadian Therapeutic Recreation Association website: www.canadian-tr.org

Health Sciences Association of Alberta (HSAA) website: www.hsaa.ca

Related Occupational Profiles

Athletic Therapist
Expressive Arts Therapists
Gerontological Specialist
Kinesiologist
Occupational Therapist
Physiotherapist
Recreation Co-ordinator/Supervisor
Rehabilitation Practitioner

Related High School Subjects

Communication Technology; Fine Arts (Dance; Drama; Music; and Visual Arts); Language Arts; Languages (other than English); Management and Marketing; Mathematics; Physical Education; Science (Biology); and Social Studies

Related Post-Secondary Fields of Study

Health Care and Medical Sciences

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Recreation Vehicle Service Technician

Apprenticeship and Industry Training

Produced FEBRUARY 2006

Recreation vehicle service technicians install, repair and maintain interior and exterior components on motor homes, travel trailers, fifth wheel trailers, truck campers, tent trailers and van conversions.

NOC Number(s): 7383.3
Minimum Education: Apprenticeship Trade - Grade 10
Employment Outlook: Employment turnover plus below average occupational growth in Alberta
Interests: **O I M**

Duties

Duties vary from one position to another but, in general, recreation vehicle service technicians:

- install accessories
- perform pre-delivery inspections
- write repair estimates and read and write the repair order
- troubleshoot, repair and maintain propane gas and electric appliances such as furnaces, refrigerators, water heaters, ranges and air conditioners
- repair fibreglass, body and structural components
- install, repair, replace and maintain roofs, siding, windows, doors vents, awnings, floor coverings, cabinets, counters, plumbing systems, electrical systems, propane gas systems, batteries and charging systems.

Eventhough technicians do not repair engines or drive train components of motorized vehicles, they may install trailer and fifth wheel hitches, wire tow vehicles and perform maintenance and repairs on trailer frames, undercarriage and suspension.

In general, recreation vehicle service technicians:

- examine, troubleshoot and diagnose units in need of repair or maintenance
- use testing equipment, troubleshoot techniques, manufacturers' specifications and Internet websites to assist at locating faults and performing repairs
- use manuals, catalogues and Internet websites to order repair parts and components
- use computerized and electronic devices for testing components
- communicate with supervisors, manufacturers and consumers to ensure timely, efficient and economical repairs
- dismantle faulty assemblies, repair or replace worn and damaged parts.

Working Conditions

Recreation vehicle service technicians usually work at indoor shops and occasionally work outdoors and at RV sites. Most work a 40-hour, five-day week. However, some evening, weekend or holiday work may be required, particularly during the busier summer months.

Recreation vehicle service technicians may be required to lift items weighing over 25 kilograms.

Personal Characteristics

Recreation vehicle service technicians need the following characteristics:

- good communication, organizational and learning skills
- good manual dexterity and balance while working off the ground
- mechanical, electrical and electronics aptitude
- good trouble-shooting and problem-solving capabilities
- the ability to work either independently or as a team member
- the ability to keep up to date with changing technology.

They should enjoy being challenged by a broad-based, diverse variety of different tasks that are rarely repetitious in nature. They also need pride in workmanship and the desire to attain a superior level of expertise.

Educational Requirements

To work in Alberta, recreation vehicle service technicians must be registered apprentices or certified journeymen.

To **register** with **Alberta Apprenticeship and Industry Training**, apprentices must:

- have at least an Alberta Grade 10 education with Math 10 or 13, Pure Math 10 or Applied Math 10 and English 10 or 13 (or equivalent) or pass an entrance exam
- find a suitable employer who is willing to hire and train an apprentice. Most employers prefer to hire high school graduates and may select apprentices from among their current employees. Background knowledge in electricity, gas fitting, carpentry, plumbing, mechanics and sheet metal are an asset.

The **term of apprenticeship** is three years (three 12-month periods) that include a minimum of 1,600 hours of on-the-job training and eight weeks of technical training each year. High school students can become apprentices and gain credits toward apprenticeship training and a high school diploma at the same time through the Registered Apprenticeship Program (RAP).

Applicants who have related training or work experience may be eligible for credit or certification.

Recreation vehicle service technician apprentices may attempt the Interprovincial Exam in the final period of their apprenticeship training and, if successful, are granted a Red Seal (which is recognized in most parts of Canada).

Technical training is arranged by Alberta Apprenticeship and Industry Training and is currently offered at the Southern Alberta Institute of Technology (SAIT) in Calgary.

Pre-employment programs for prospective apprentices and continuing education programs for journeymen may be offered on an as needed basis by the institution(s) listed above or other schools.

Employment and Advancement

Recreation vehicle service technicians are employed by recreation vehicle dealerships, manufacturers and independent repair shops.

Experienced recreation vehicle service technicians may advance to a number of supervisory or administrative positions, specialize in a particular area of repair, or open their own shops. Alberta certified journeyman recreation vehicle service technicians who have the supervisory or management skills required by industry may apply for an Achievement in Business Competencies Blue Seal by contacting Alberta Apprenticeship and Industry Training.

Recreational vehicle service technicians are part of the larger National Occupational Classification 7383: Other Trades and Related Occupations. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Management, Administrative and Other Support Services**
- **Wood Products Manufacturing**
- **Repair, Maintenance, Personal and Other Services**
- **Agriculture**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- time of year (see working conditions)
- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

About 1,100 Albertans are employed in the Other Trades and Related Occupations group, which is expected to grow 0.3 to 1.3 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover. (**Note**: Since recreational vehicle service technicians form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for recreational vehicle service technicians.)

However, this trade has witnessed a steady growth and a high demand for qualified recreation vehicle service technicians.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Apprentice recreation vehicle service technicians earn at least 55 per cent of the journeyman wage rate in their place of employment in the first year, 65 per cent in the second and 75 per cent in the third. According to the Alberta Provincial Apprenticeship Committee for this trade, journeyman wage rates vary, but generally range from **$18 to $25 an hour plus benefits** (2004 estimate).

According to the **2005 Alberta Wage and Salary Survey**, Albertans working part-time or full-time in the Recreational Vehicle Technicians occupational group earned **up to $48,600 a year**. Those with three years of experience earned from **$27,400 to $44,600 a year.** The average salary was **$37,800 a year**.

Other Sources of Information

Alberta Apprenticeship and Industry Training website: www.tradesecrets.org

Recreation Vehicle Dealers Association website: www.rvda-alberta.org

Related Occupational Profiles

Aircraft Maintenance Engineer
Appliance Service Technician
Electrician
Gasfitter
Refrigeration and Air Conditioning Mechanic
Sheet Metal Worker

Related High School Subjects

Construction Technologies; Electro-Technologies; Fabrication Studies; Language Arts; Mathematics; Mechanics; and Physical Education

Related Post-Secondary Fields of Study

Trades, Industrial and Related Training

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Refinery/Upgrader Process Operator

Produced AUGUST 2005

Refinery/upgrader process operators are responsible for the day to day operations of oil refineries and upgraders.

NOC Number(s): 9232
Minimum Education: 1 year post-secondary education/training
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: **O I d**

Duties

Oil or oilsand (bitumen) that comes directly out of the ground must go through a number of processes in the field and at the refinery before it can be used to meet energy and raw material manufacturing needs. In the field, raw oil (or oilsand) is treated to prepare it for movement down major pipelines. At upgraders, it is treated to the point that it can be used by a refinery. At refineries, it goes through a number of additional distillation processes (e.g. cracking, blending, reforming) which separates it into useable products such as gasoline, kerosene, diesel fuel, light and heavy fuel oils, jet fuel, greases, lubricating oil, waxes and asphalt.

Refinery/upgrader process operators' job titles and duties vary from one refinery/upgrader to another. There are often different categories of process operators and different refineries/upgraders have various combinations of categories. Operators may be known by the process in which they are involved (e.g. treater, blender, bitumen extractor or upgrader operator) or by the unit in which they work (e.g. catalytic cracking unit operator or pumping unit operator). Their duties depend on the unit in which they work, the area of the unit, the refinery's level of automation and the company for which they work.

In general, however, refinery/upgrader process operators:

- conduct ongoing routine checks and tasks
- prepare equipment for maintenance work
- respond to problems and emergency situations as they arise
- record readings (manually or on computer)
- make adjustments on equipment and note possible problems
- take samples of oil, gas or water
- conduct basic chemical tests
- ensure safe operations
- perform general housekeeping duties such as wiping up oil spills and sweeping floors.

Some refinery/upgrader process operators are **control room operators** who co-ordinate shut-downs and major projects. When working in the control room, operators:

- monitor process indicators
- ensure safety and environmental regulations are being followed
- monitor alarms which provide information about the operation of each unit in their section
- make necessary changes and adjustments such as adjusting flows, temperatures, pressures or levels to ensure safe and efficient plant operation.

Control room operators work with special types of technical equipment. In refineries/upgraders that are highly automated, they use a plant computer control system.

Working Conditions

Since refineries/upgraders operate 24 hours a day, year round, refinery/upgrader operators usually work eight or 12 hour shifts. Process operators spend about half of their time working in the control room and the other half outdoors.

Routine checks are carried out at all hours regardless of weather conditions. Lifting items weighing up to 25 kilograms is routinely required. Where refinery/upgrader units are spread over a wide area, operators do a lot of walking.

Personal Characteristics

Refinery/upgrader process operators need the following characteristics:

- the ability to work changing shifts and remain alert
- the ability to think and learn quickly
- an interest in working with massive systems and complex machines
- agility and the ability to lift 25 kilograms to shoulder height
- problem solving and decision making skills
- the ability to work with others in a team environment
- the ability to give clear directions in emergency situations.

They should enjoy controlling equipment, instruments and machinery; analyzing information to solve problems and working with others in a team.

Educational Requirements

The minimum education requirement for refinery/upgrader process operators is a high school diploma plus training in power engineering or process operations. For some positions, employers prefer to hire applicants who have a two year diploma in chemical or petroleum engineering technology. Course work or practical experience with machines or electrical equipment is an asset.

Before enrolling in an education program, prospective process operators should contact potential employers to discuss hiring practices and preferences.

For information about power engineering programs, see the Power Engineer occupational profile. The following Alberta post-secondary institutions offer programs related to process operations:

- **Lakeland College** in Lloydminster offers a one year Heavy Oil Operations Technician certificate program. The entrance requirement is a high school diploma with English Language Arts 30-1 or English 30 (or 65 per cent in ELA 30-2 or English 33), Pure Math 30 or Math 30 (or 65 per cent in Applied Math 30 or Math 33), and Physics 20 or Chemistry 20 (or 65 per cent in Science 20).
- The **Northern Alberta Institute of Technology (NAIT)** in Edmonton offers two year Chemical Engineering Technology and Petroleum Engineering Technology diploma programs. The entrance requirement for both programs is a high school diploma or equivalent with English 30 or 33, Pure Math 30 or Math 30 (or 60 per cent in Math 33), and one of the following: Science 30, Chemistry 30 or Physics 30.
- The **Southern Alberta Institute of Technology (SAIT)** in Calgary offers two year Chemical Engineering Technology and Petroleum Engineering Technology diploma programs. Entrance requirements for both programs include a high school diploma with Grade 12 English, Pure Math 30 or Math 30, Chemistry 30 and either Science 30 or Physics 20. Applicants for Petroleum Engineering Technology must have at least 60 per cent in Pure Math 30 or Math 30. SAIT also offers a two year after-diploma Bachelor of Applied Petroleum Engineering Technology degree program and a one year Process Operations certificate program that includes a four-week practicum. The entrance requirement for the certificate program is 70 Alberta high school credits (Grade 11) including English 20 or 23, or equivalent.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

(section revised JANUARY 2006)

New employees usually take in-house training courses and learn on the job by working with other operators.

Experienced process operators may advance to supervisory positions or move into related positions in:

- pulp mills
- water treatment plants
- petrochemical plants
- food and beverage plants
- hospitals
- fertilizer plants
- power generation facilities.

Refinery/upgrader process operators are part of the larger National Occupational Classification 9232: Petroleum, Gas and Chemical Process Operators. In Alberta, over 75 per cent of people employed in this classification work in the **Oil and Gas Extraction** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Oil and Gas Extraction industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 7,000 Albertans are employed in the Petroleum, Gas and Chemical Process Operators occupational group, which is expected to grow 2.2 to 3.2 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 150 to 230 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since refinery/upgrader process operators form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for refinery/upgrader process operators.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Petroleum, Gas and Chemical Process Operators occupational group working part-time or full-time earned from **$35,400 to $115,000 a year** (salary ranges for refinery/upgrader operators are generally at the lower end of this overall range). The average salary was **$77,900 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Related Occupational Profiles

Field Production Operator
Gas Pipeline Operators and Maintenance Workers
Gas Plant Operator
Oil Pipeline Operators and Maintenance Workers
Pulpmill Operator

Related High School Subjects

Community Health; Electro-Technologies; Energy and Mines; Information Processing; Language Arts; Mathematics; Physical Education; and Science (Chemistry; and Physics)

Related Post-Secondary Fields of Study

Trades, Industrial and Related Training

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Reflexologist

Produced NOVEMBER 2004

Reflexologists apply varying degrees of finger pressure to specific points and areas on clients' bodies, usually their feet or hands, to improve health and well-being.

NOC Number(s): 3232.6
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **S I M**

Duties

Reflexology is based on the idea that stimulating reflexes in the feet, hands, ears, face and scalp affects the functioning of other parts of the body. The reflexologist's goal is to help the body achieve optimum health by removing blockages to normal body function and self-healing.

Each reflexology session with a client usually takes about an hour. During these sessions, reflexologists:

- ask questions about the client's medical history, physical condition, lifestyle and preferences
- assess their physical, mental and emotional health
- use gentle compression techniques with thumbs and fingers to stimulate specific reflex points or areas
- identify and record reflex sensitivities.

Working Conditions

Reflexologists usually work in wellness centres. Some work from their homes or travel to clients' homes. Their hours of work vary considerably but generally include evenings and weekends.

Personal Characteristics

Reflexologists need the following characteristics:

- an interest in working with people on a one-to-one basis
- willingness to make direct physical contact with clients
- a genuine interest in clients' well-being
- good health and stamina
- strong hands
- the ability to communicate and establish rapport with others.

They should enjoy working with people and analyzing information to determine appropriate techniques.

Educational Requirements

The practice of reflexology is not regulated in Alberta. Reflexology skills and general knowledge of anatomy and body systems are desirable but there are **no legislated minimum education or training requirements.**

Personal interest and certification-level courses in Reflexology are offered by a variety of agencies (private vocational schools, school boards, the continuing education departments of post-secondary institutions) when there is sufficient demand to warrant offering a course. Courses are advertised in continuing education brochures and newspapers.

Mount Royal College in Calgary offers a four course Reflexology Therapy certificate program through Continuing Education that takes nine months to complete on a part-time basis. Applicants must have a high school diploma or equivalent. Biology 30 is recommended. For current information about mature student admisssion policies, please check the College's calendar or website.

For information about Massage Therapy programs that may include reflexology courses, see the Massage Therapist occupational profile.

Before enrolling in a reflexology course or program, prospective reflexologists should discuss their training options with several practicing reflexologists who are working in different types of environments.

Other Requirements

Depending on where they live in the province, self-employed reflexologists may be required to have a municipal business license or annual police security clearance.

Reflexologists must be registered with a recognized professional association for their clients to be reimbursed for the cost of reflexology services through extended health care benefits plans.

Employment and Advancement

(section revised JANUARY 2006)

Most reflexologists are self-employed. They may work in private homes or in settings such as chiropractic offices, physiotherapy clinics or aesthetic salons. Many reflexologists work part-time or also offer related services (e.g. reiki, iridology) as well.

Advancement in this occupation generally takes the form of building a larger client base.

Reflexologists are part of the larger National Occupational Classification 3232: Midwives and Practitioners of Natural Healing. In Alberta, most people employed in this classification work in the **Health Care and Social Assistance** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Health Care and Social Assistance industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

About 500 Albertans are employed in the Midwives and Practitioners of Natural Healing occupational group which is expected to grow 1.4 to 2.4 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover. (**Note**: Since reflexologists form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for reflexologists.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Reflexologists' treatment fees range from **$30 to $60 per hour (2004 estimate).** The amount reflexologists earn in any given period depends on the number of hours they work and their overhead costs (e.g. the cost of renting space in a clinic or salon).

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Reflexology Association of Canada (RAC) website: www.reflexologycanada.ca

Related Occupational Profiles

Acupuncturist
Herbalist
Massage Therapist
Naturopathic Doctor
Podiatrist

Related High School Subjects

Community Health; and Physical Education

Related Post-Secondary Fields of Study

Personal and Food Services

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Refrigeration and Air Conditioning Mechanic

Apprenticeship and Industry Training

Produced FEBRUARY 2006

Refrigeration and air conditioning mechanics install, maintain, repair and overhaul industrial, commercial and residential refrigeration and air conditioning systems and their component parts.

NOC Number(s): 7313
Minimum Education: Apprenticeship Trade - Grade 12
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **O M I**

Duties

At installation sites, refrigeration and air conditioning mechanics:

- work from blueprints or verbal instructions to mount or place system components
- assemble and install refrigeration or air conditioning components such as compressors, condensers, evaporators and metering devices
- install and calibrate related controls (including wiring)
- start up systems, test lines to detect leaks and record the readings taken to ensure that the system is functioning satisfactorily.

Maintenance work involves:

- checking all parts of a system
- oiling moving parts
- keeping units filled with refrigerant and adjusting valves.

When there is a malfunction, refrigeration and air conditioning mechanics diagnose the problem and fix the unit by replacing or repairing controls, electric wiring or other parts.

Mechanics also repair heating equipment, troubleshoot gas-fired equipment and calibrate gas-related controls.

Working Conditions

The working environment varies greatly from one job to another. Refrigeration and air conditioning mechanics may work anywhere from compressor rooms and roof tops to clean, comfortable computer rooms. They normally work a 40-hour week year-round. There is some risk of injury when working with electricity, gases under high pressure and hazardous gases.

Refrigeration and air conditioning mechanics may be required to lift items weighing over 25 kilograms.

Personal Characteristics

Refrigeration and air conditioning mechanics need the following characteristics:

- mechanical ability
- good co-ordination and manual dexterity
- physical strength and stamina
- the ability to work well with co-workers
- good customer service skills
- the ability to keep up to date with changing technology.

They should enjoy solving problems and working with little supervision.

Educational Requirements

To work in Alberta, refrigeration and air conditioning mechanics must be registered apprentices or certified journeymen.

To **register** with **Alberta Apprenticeship and Industry Training**, apprentices must:

- have an Alberta high school diploma with Math 20 or 23, Pure Math 20 or Applied Math 20 (or equivalent) or pass an entrance exam
- find a suitable employer who is willing to hire and train an apprentice. Most employers prefer to hire post-secondary graduates of technical programs or high school graduates who have good marks and an aptitude for science and mechanics, or journeymen in other trades.

The **term of apprenticeship** is four years (four 12-month periods) that include a minimum of 1,500 hours of on-the-job training and eight weeks of technical training each year. High school students can become apprentices and gain credits toward apprenticeship training and a high school diploma at the same time through the Registered Apprenticeship Program (RAP).

Applicants who have related training or work experience may be eligible for credit or certification.

Refrigeration and air conditioning mechanic apprentices may attempt the Interprovincial Exam in the final period of their apprenticeship training and, if successful, are granted a Red Seal (which is recognized in most parts of Canada).

Technical training is arranged by Alberta Apprenticeship and Industry Training and is currently offered at the Southern Alberta Institute of Technology (SAIT) in Calgary.

Outside the apprenticeship program, the **Northern Alberta Institute of Technology (NAIT)** in Edmonton offers a one year Heating Ventilation and Air Conditioning (HVAC) Specialist certificate program and a one year Building Environmental Systems Technology (BEST) diploma program. The entrance requirement for HVAC program is Grade 11 or equivalent with at least 60 per cent in English 20 or 23, Math 20 or 23 and one of Science 20, Physics 20 and Chemistry 20. The entrance requirement for the BEST program is successful completion of the HVAC Specialist program or equivalent.

Pre-employment programs for prospective apprentices and continuing education programs for journeymen may be offered on an as needed basis by the institution(s) listed above or other schools.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

Refrigeration and air conditioning mechanics usually work for companies that install and service air-conditioning and refrigeration systems. Some are self-employed.

Experienced refrigeration and air conditioning mechanics may advance to supervisory positions. Alberta certified journeyman refrigeration and air conditioning mechanics who have the supervisory or management skills required by industry may apply for an Achievement in Business Competencies Blue Seal by contacting Alberta Apprenticeship and Industry Training.

In Alberta, over 75 per cent of people employed as refrigeration and air conditioning mechanics work in the following industries:

- **Construction**
- **Metals, Metal Fabrication and Machinery Manufacturing**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 2,250 Albertans are employed in the Refrigeration and Air Conditioning Mechanics occupational group which is expected to grow 1.4 to 2.4 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 30 to 60 **new** positions will be created each year **in addition** to job openings created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Apprentice refrigeration and air conditioning mechanics earn 50 per cent of the journeyman wage rate in their place of employment in the first year, 60 per cent in the second, 75 per cent in the third and 85 per cent in the fourth. According to the Alberta Provincial Apprenticeship Committee for this trade, journeyman wage rates vary, but generally range from **$23 to $32 an hour plus benefits** (2004 estimate).

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Refrigeration and Air Conditioning Mechanics occupational group working part-time or full-time earned from **$19,300 to $82,400 a year.** The average salary was **$55,700 a year.**

Other Sources of Information

Alberta Apprenticeship and Industry Training website: www.tradesecrets.org

Post-secondary institution calendars or websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Construction Industry "Trade Up!" website: www.careersconstruction.com

Calgary Construction Association website: www.cca.cc

Construction Sector Council website: www.csc-ca.org

Related Occupational Profiles

Appliance Service Technician
Canadian Forces Personnel - Non Commissioned
Gasfitter
Instrument Technician
Plumber
Recreation Vehicle Service Technician
Sheet Metal Worker
Sprinkler Systems Installer
Steamfitter-Pipefitter
Transport Refrigeration Technician

Related High School Subjects

Construction Technologies; Electro-Technologies; Fabrication Studies; Language Arts; Mathematics; Mechanics; Physical Education; and Science (Chemistry; and Physics)

Related Post-Secondary Fields of Study

Trades, Industrial and Related Training

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Refuse Collector

Produced JUNE 2003

Refuse collectors pick up non-recyclable waste materials from homes, apartment buildings and businesses along designated routes. They may be employed by municipalities or for private waste management companies.

NOC Number(s): 7621
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus below average occupational growth in Alberta
Interests: **M o i**

Duties

In general, refuse collectors:

- hop on and off garbage trucks, following established routes through residential alleys and streets or through business and industrial areas
- empty waste bins or throw plastic garbage bags into the truck.

In many municipalities, the duties of refuse collectors are combined with those of refuse truck drivers (for more information, see the Refuse Truck Drive occupational profile).

Working Conditions

Refuse collectors work outdoors in all weather conditions with garbage that is sometimes smelly and messy. They must observe safety precautions to avoid the spread of disease and avoid injuries associated with lifting heavy objects, handling sharp materials and working in high traffic areas. Many municipalities request that citizens limit the weight of garbage in their containers; however, refuse collectors are sometimes required to lift items weighing over 20 kilograms.

Refuse collectors may start work early in the morning or work afternoon shifts. The length of their working day varies from one employer to another. Some private sector employees work ten hours a day, five days a week.

Personal Characteristics

Refuse collectors need the following characteristics:

- the ability to be on their feet, lift heavy objects and work at a steady pace all day
- the ability to get along with fellow workers, customers and members of the public.

They should enjoy physical labour, taking a methodical approach to their work and working outdoors.

Educational Requirements

There are no standard minimum education requirements for refuse collectors. Some employers require job applicants to have grade 12 or equivalent, and pass a medical exam.

Refuse collectors who also drive trucks must have an appropriate driver's license (Class 5, Class 5 with an air brake endorsement or Class 3 with an air brake endorsement, depending on the type of truck).

Refuse collectors are **trained on the job**.

Employment and Advancement

(section revised JANUARY 2006)

Refuse collectors are employed by:

- cities, towns and rural municipalities
- waste management companies that contract their services to municipalities and businesses.

Refuse collectors who have an appropriate driver's license and are able to read maps and find addresses quickly may advance to refuse truck driver positions (for more information, see the Refuse Truck Driver occupational profile). Advancement opportunities to other positions are best for those who have a high school diploma.

Refuse collectors are part of the larger National Occupational Classification 7621: Public Works and Maintenance Labourers. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Public Administration**
- **Management, Administrative and Other Support Services**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

About 2,550 Albertans are employed in the Public Works and Maintenance Labourers occupational group which is expected to grow 0.6 to 1.6 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 10 to 40 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since refuse collectors form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for refuse collectors.)

Most municipalities have a core of permanent workers in which the employment turnover rate is low. However, temporary employees may be hired to help during peak periods around Christmas and spring clean-up, and for vacation relief during summer months. Employment turnover is somewhat higher in the private sector so job openings may occur more frequently.

Salary

(section revised OCTOBER 2005)

Income figures for refuse collectors vary depending on the employer and the method of payment. Those employed in the private sector may be paid according to the number of stops or by the hour.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Public Works and Maintenance Labourers occupational group working part-time or full-time earned from **$13,500 to $66,800 a year.** The average salary was **$34,200 a year.**

Related Occupational Profiles

Municipal Recycling Waste Handler
Refuse Truck Driver

Related High School Subjects

Physical Education

Related Post-Secondary Fields of Study

Driver Training

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Refuse Truck Driver

Produced JUNE 2003

Refuse truck drivers pick up non-recyclable waste materials from homes, apartment buildings and businesses along designated routes, and transport them to landfill sites or incinerators for disposal. They may be employed by municipalities or private waste management companies.

NOC Number(s): 7422
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus below average occupational growth in Alberta
Interests: **O M i**

Duties

Refuse truck drivers may work alone or in teams with refuse collectors. Their duties vary from one employer to another but, in general, they:

- check trucks to ensure that they are in safe driving condition
- drive along established routes through residential streets and alleys or through business and industrial areas
- pick up and deposit garbage into trucks equipped with compactors
- communicate with dispatchers concerning delays, accidents, equipment breakdowns or other maintenance problems
- refuel trucks at depots
- drive to disposal sites to empty trucks when they are full
- keep a daily log
- maintain trucks and equipment at the end of the day, including cleaning the compactor body
- maintain a clean cab, ensure that brakes are adjusted and the fluids topped up.

Some refuse truck, tractor-trailer, front-end pickers and roll-off bin drivers operate automated and semi-automated equipment to unload large garbage containers such as dumpsters. Others drive garbage trucks around residential routes and, if they work alone, empty residential waste bins and throw plastic garbage bags into the truck. In many municipalities, the duties of refuse collectors are combined with those of refuse truck drivers (for more information, see the Refuse Collector occupational profile).

Working Conditions

Refuse truck drivers work in all weather conditions with garbage that is sometimes smelly and messy. They must observe safety precautions to avoid the spread of disease and to prevent injuries associated with lifting heavy objects, handling sharp materials and working in traffic areas. Some refuse truck drivers are required to push/pull or lift items weighing up to and sometimes over 20 kilograms.

Refuse truck drivers generally work weekdays, morning or afternoon shifts. The length of their working day varies from one employer to another. Some private sector employees work ten-hour days.

Personal Characteristics

Refuse truck drivers need the following characteristics:

- the ability to read maps and find addresses quickly
- the ability to communicate and get along with customers, fellow workers or the general public.

Those who work on residential routes must be physically able to lift heavy objects at a steady pace for long hours.

Refuse truck drivers should enjoy routine, repetitive work and driving.

Educational Requirements

Refuse truck drivers are **trained on the job**. There are no standard minimum education requirements; however, some employers prefer to hire applicants who have a high school diploma or equivalent.

Employers generally require applicants for refuse truck driver positions to:

- be in good physical condition
- hold an Alberta Class 5, 3 or 1 driver's license with air brakes endorsement (depending on the type of truck) for a specified minimum length of time
- have a specified minimum number of demerits.

Experience manoeuvring large trucks in small spaces is a definite asset.

Employment and Advancement

(section revised JANUARY 2006)

Refuse truck drivers are employed by:

- cities, towns and rural municipalities
- waste management companies which contract their services to municipalities and businesses.

Experienced drivers may move into other driving occupations (for more information, see the Municipal Recycling Truck Driver and Truck Driver occupational profiles). Advancement opportunities are best for those who have a high school diploma. They may move into other positions in the organization or advance to supervisory positions.

Refuse truck drivers are part of the larger National Occupational Classification 7422: Public Works Maintenance Equipment Operators. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Management, Administrative and Other Support Services**
- **Transportation and Warehousing**
- **Construction**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 1,800 Albertans are employed in the Public Works Maintenance Equipment Operators occupational group which is expected to grow 0.9 to 1.9 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 10 to 40 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since refuse truck drivers form only a small part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for refuse truck drivers.)

Most municipalities have a core of permanent workers in which the employment turnover rate is low. However, in some municipalities, temporary employees are hired to help during peak periods around Christmas and spring clean-up and for vacation relief during summer months. Employment turnover is somewhat higher in the private sector so job openings may occur more frequently.

Salary

(section revised OCTOBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Public Works Maintenance Equipment Operators occupational group working part-time or full-time earned from **$16,700 to $53,600 a year.** The average salary was **$40,200 a year.**

Related Occupational Profiles

Municipal Recycling Truck Driver
Refuse Collector
Truck Driver

Related High School Subjects

Physical Education

Related Post-Secondary Fields of Study

Driver Training

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Registered Nurse

Produced SEPTEMBER 2004

Registered nurses provide professional nursing services for individuals, families, groups and communities, deliver health-education programs and provide consultative nursing services to promote, maintain and restore patient health.

NOC Number(s): 3152.1
Minimum Education: 3 years post-secondary education/training
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: **S M D**

Duties

Registered nurses may work independently or as members of a health care team. Key roles include:

- providing direct care
- assessing the needs of individuals, families, groups or communities
- planning, implementing and documenting nursing care plans
- co-ordinating patient care
- health counselling
- managing and implementing patient care plans, leading nursing teams and advocating for clients.

In hospitals and related health care settings, these roles may include activities such as:

- co-ordinating the activities of multi-disciplinary teams responsible for planning and implementing patient care plans
- observing, assessing and monitoring patient symptoms, reactions and progress
- independently implementing nursing interventions as needed
- collaborating with other members of health care teams regarding patient treatments and examinations
- administering medications, injections and intravenous therapy
- preparing patients and assisting surgeons during operations
- assisting in childbirth, managing labour and caring for newborns and their families
- preventing or treating injuries or illness
- supervising the provision of patient and client care
- managing nursing services.

Registered nurses may specialize in providing a particular type of care (e.g. emergency/trauma care or critical care) or in working with a particular type of patient (e.g. working with children or with individuals who have heart disease).

Increasingly, nurses are employed in community and workplace settings as well as traditional health care settings. For more information, see the Community Health Nurse and Occupational Health Nurse profiles.

For information about nursing duties specific to psychiatric units and facilities, see the Psychiatric Nurse occupational profile.

Working Conditions

Nursing can be intellectually, physically and emotionally demanding. Nurses are often exposed to infectious bacteria and viruses and, in acute care settings, work with very sick patients. They are routinely required to lift up to 25 kilograms (e.g. helping to lift patients).

In institutional settings, nurses work a variety of shifts including nights, weekends and holidays.

Personal Characteristics

Registered nurses need the following characteristics:

- problem solving and critical thinking abilities
- effective verbal and written communication skills
- organizational skills
- good judgment and the ability to make decisions quickly, especially in stressful situations
- patience, understanding and a caring attitude
- flexibility, humour and enthusiasm
- the ability to lead and work co-operatively with others
- general good health.

They should enjoy working with and consulting others, solving problems, providing care and directing the work of others.

Educational Requirements

In Alberta, registered nurse status requires a **diploma or bachelor's degree in nursing**. The following post-secondary institutions offer approved nursing education programs:

- **Athabasca University**
- **Grande Prairie Regional College**
- **Grant MacEwan College** in Edmonton
- **Keyano College** in Fort McMurray
- **Lethbridge Community College**
- **Medicine Hat College**
- **Mount Royal College** in Calgary
- **Red Deer College**
- **University of Alberta** in Edmonton
- **University of Calgary**
- **University of Lethbridge**.

These schools offer collaborative programs to enable students to graduate with a bachelor's degree in nursing. Degree programs may allow students to exit at the Diploma level.

Admission requirements vary but generally include a high school diploma with an overall average of at least 60 or 65 per cent in:

- English 30
- Biology 30
- Chemistry 30 (some institutions will accept Science 30)
- Math 30 or Pure Math 30 (some institutions will accept Math 31, Physics 30, or at least 60 per cent in Math 33 or Applied Math 30)
- a fifth 30-level course (Social Studies 30 or a 30-level language recommended).

Admission to quota programs is competitive so higher marks may be required to gain admission.

For current information on programs and mature student admission policies, please check post-secondary calendars or websites.

Continuing education programs are often offered on an as needed basis.

Other Requirements

(section revised OCTOBER 2004)

Under the current legislation governing registered nurses in Alberta, the Nursing Profession Act and associated regulations, only registered members of the Alberta Association of Registered Nurses (AARN) may call themselves or practice as a Registered Nurse.

Employment and Advancement

(section revised JANUARY 2006)

Registered nurses are employed by:

- regional health authorities
- clinics, (medical, dental and community)
- nursing homes
- home care agencies
- large corporations and insurance companies
- government services (e.g. penitentiaries, outpost nursing, the foreign service, the Canadian Armed Forces).

Some nurses are self-employed.

Advancement to supervisory or administrative positions may require a bachelor's degree in nursing. Nurses may move into related occupations such as researcher, manager or university professor.

In Alberta, most people employed as registered nurses work in the **Health Care and Social Assistance** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Health Care and Social Assistance industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 27,150 Albertans are employed in the Registered Nurses occupational group which is expected to grow 3.3 to 4.3 per cent each year from 2005 to 2010 in Alberta. It is forecasted that over 600 **new** positions will be created each year **in addition** to job openings created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Salaries for nurses vary depending on the employer and the nurse's hours, educational qualifications, experience and responsibilities.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the General Duty Registered Nurses occupational group working part-time or full-time earned from **$15,200 to $61,800 a year.** The average salary was **$48,700 a year.**

2004 salaries for registered nurses who worked full-time (1921 hours a year) and were represented by United Nurses of Alberta **started at $50,580 a year**.

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Association of Registered Nurses (AARN) website: www.nurses.ab.ca

Canadian Federation of Nurses Unions (CFNU) website: www.nursesunions.ca

Canadian Nurses Association (CNA) website: www.cna-nurses.ca

United Nurses of Alberta (UNA) website: www.una.ab.ca

Related Occupational Profiles

Canadian Forces Personnel - Commissioned Officer
Community Health Nurse
Licensed Practical Nurse
Mental Health Worker
Midwife
Nurse Practitioner
Occupational Health Nurse
Psychiatric Nurse
Respiratory Therapist

Related High School Subjects

Community Health; Language Arts; Languages (other than English); Mathematics; Physical Education; Science (Biology; and Chemistry); and Social Studies

Related Post-Secondary Fields of Study

Health Care and Medical Sciences

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Rehabilitation Practitioner

Produced FEBRUARY 2005

Rehabilitation practitioners help children and adults who have disabilities to become more independent and live active lives as participating members of the community. They usually work as part of a team to assess, design and implement intervention and teaching activities which address individuals' residential, educational, social, employment and recreational needs.

NOC Number(s): 4212
Minimum Education: 2 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **S M i**

Duties

Rehabilitation practitioners work with children, adolescents and adults who have developmental, emotional or physical disabilities. They may specialize in working with people in a particular age group or with people who have a specific type of disability.

In general, rehabilitation practitioners:

- assess clients' abilities and needs
- help clients explore lifestyle, educational and career options
- educate and support clients in making use of community services related to their recreational, medical, learning, vocational and leisure needs
- identify programs and employers that provide relevant services and help clients access those services
- maintain progress records
- assist clients in developing support networks
- assist with personal care needs
- provide support, training and guidance to clients and their families.

Rehabilitation practitioners may work as part of a team of professionals (including doctors, psychologists, teachers and therapists) and family members to develop and implement specific rehabilitation plans that include behavioural, residential, social or employment goals.

Working Conditions

Hours of work may vary considerably depending on the rehabilitation practitioner's work setting. Shift work is required in residential settings because they operate 24 hours a day. In other settings, rehabilitation practitioners usually work standard office hours. Some evening hours may be required to attend meetings, program sessions, workshops or seminars, and do the reading required to keep up to date on trends and services in rehabilitation.

Personal Characteristics

Rehabilitation workers need the following characteristics:

- empathy and respect for the people they work with
- enthusiasm, a positive attitude and persistence
- good communication skills including well developed listening skills and the ability to advocate effectively
- the ability to motivate people
- good organizational skills
- the ability to work independently or as part of a team with other professionals.

They should enjoy helping and working with others and developing innovative approaches to problems.

Educational Requirements

(section revised APRIL 2005)

In Alberta, the following post-secondary institutions offer programs related to rehabilitation services:

- **Bow Valley College** offers a 36 week Disability and Community Support certificate program. The entrance requirement is a high school diploma with at least 60 per cent in English 33 or 30 or equivalent.
- **Grande Prairie Regional College** offers a one year Disability and Community Support certificate program and a two year diploma program. The entrance requirement for both programs is a high school diploma or equivalent with English 30 (or at least 60 per cent in English 33). A first aid certificate, CPR certificate and criminal record check are required prior to practicum.
- **Grant MacEwan College** in Edmonton offers a two year Disability Studies - Leadership and Community diploma program that is also available part-time evenings. The entrance requirements are a high school diploma or equivalent with at least 65 per cent in English 30 (or 75 per cent in English 33), a letter of reference and 50 hours of related volunteer or work experience, and a current immunization record. A first aid certificate and criminal record check are required by the beginning of the intake term. Grant MacEwan College also offers 30 credit certificate and 60 credit diploma programs in Disability Management in the Workplace. The entrance requirement is a high school diploma or equivalent.
- **Lakeland College** in Lloydminster offers a two year Rehabilitation Services diploma program. The entrance requirements are a high school diploma or equivalent with English 30 (or 65 per cent in English 33) and a criminal record check.
- **Lethbridge Community College** offers a two year Disability and Community Rehabilitation diploma program which is also available through distance education. The entrance requirements are a high school diploma with English 30 or 33 (Biology 30 is recommended) and at least 14 to 16 hours of volunteer experience in a rehabilitation setting. Students who have employment experience may be eligible for Prior Learning Credit.
- **Medicine Hat College** offers a one year Hearing Assistant and Vision Assistant certificate programs and a two year Intervenor for DeafBlind Persons diploma program. The entrance requirements are a high school diploma with English 30, a 30 level science and one other 30 level course such as Social Studies 30, first aid and CPR certificates, a criminal record check, child welfare check and health immunization.
- **Mount Royal College** in Calgary offers a two year Disability Studies diploma program. The entrance requirement is a high school diploma with English 30.
- **Portage College** in Lac La Biche offers a one year Rehabilitation Services certificate program and a two year diploma program. The entrance requirement is Grade 12 including English 30 or 33, or equivalent. A criminal record check and child welfare check are required prior to the first practicum placement.
- **Red Deer College** offers a two year Rehabilitation Services diploma program. The entrance requirement is a high school diploma or equivalent with English 30 (or 65 per cent in English 33), or equivalent.

Graduates of two year diploma programs may qualify for admission to related degree programs such as the four year Bachelor of Community Rehabilitation program at the **University of Calgary**. It is the student's responsibility to determine which courses will be accepted for credit at the institution to which they wish to transfer.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

(section revised JANUARY 2006)

Rehabilitation practitioners work for community-based agencies, families, school boards, hospitals, long term care agenices and government programs that provide:

- employment services for individuals who have disabilities
- residential supports
- educational services
- recreational programs
- outreach programs.

With additional education or on-the-job training, rehabilitation practitioners may move into related areas such as employment counselling, disability management or behaviour support management.

Rehabilitation practioners are part of the larger National Occupational Classification 4212: Community and Social Service Workers. In Alberta, over 75 per cent of people employed in this classification work in the **Health Care and Social Assistance** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Health Care and Social Assistance industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 9,600 Albertans are employed in the Community and Social Service Workers occupational group which is expected to grow 1.7 to 2.7 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 160 to 260 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since rehabilitation practioners form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for rehabilitation practioners.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Salaries for rehabilitation practitioners vary considerably depending on work setting and qualifications.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Community and Social Service Workers occupational group working part-time or full-time earned from **$14,100 to $104,900 a year**. The average salary was **$27,800 a year**.

For information about current collective agreements in the public and not-for-profit sectors, see the Health Sciences Association of Alberta (HSAA) website.

Other Sources of Information

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Association of Rehabilitation Centres website: www.albertarehab.org

Health Sciences Association of Alberta (HSAA) website: www.hsaa.ca

Related Occupational Profiles

Child and Youth Care Worker
Community Health Representative
Educational Assistant
Mental Health Worker
Occupational Therapist Assistant
Personal Care Attendant
Physical Therapy Assistant
Recreation Therapist

Related High School Subjects

Community Health; Information Processing; Language Arts; Science (Biology); and Social Studies

Related Post-Secondary Fields of Study

Health Care and Medical Sciences

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Religious Leader

Produced NOVEMBER 2002

Religious leaders, including ministers, rabbis, imam, priests, pastors, chaplains, bishops, curates and leaders in other religious communities, conduct religious services and provide inspirational, philosophical and religious education and guidance to members of their communities.

NOC Number(s): 4154
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus below average occupational growth in Alberta
Interests: **S M I**

Duties

According to the tenets of their faith, religious leaders may:

- conduct worship services and preside at ceremonies marking rites of passage (e.g. birth, marriage, death)
- organize religious education for their communities
- conduct group meetings
- counsel individuals and couples concerning spiritual, emotional and personal needs
- visit people in prisons, hospitals and homes.

Depending on the religious community, religious leaders may also administer and manage, in conjunction with a board of representatives, the finances of their religious community.

Institutional chaplains serve populations in institutions such as hospitals, post-secondary institutions, prisons and long term care facilities. Since they work with people from many faiths, chaplains may facilitate worship and study in traditions significantly different from their own.

Working Conditions

Religious leaders may serve religious communities of any size in urban or rural areas, in large well-equipped buildings or limited spaces. Their hours of work vary tremendously; they may be on call virtually every day for long periods of time. The work can be both emotionally demanding and rewarding.

Personal Characteristics

Religious leaders need the following characteristics:

- a commitment to serve
- maturity and self-discipline
- exemplary character
- a sensitivity to the needs of others
- well developed oral and written communication skills
- the ability to handle stressful situations in a healthy, balanced manner.

They should enjoy serving people, administering the rites of their faiths and the operations of their religious community and planning programs of worship and education.

Educational Requirements

(section revised JANUARY 2006)

Most religious communities expect prospective religious leaders to first become active volunteers in houses of worship or the religious community, and seek guidance from religious leaders in their faith. Formal training requirements are **specific to the particular faith**. Knowledge of more than one language is a definite asset.

In many faiths, ordination requires a bachelor's degree plus several years of post-graduate study in a seminary or theological college. In Alberta, suitable bachelor's degree programs are offered by public and private universities and colleges located throughout the province. To identify post-secondary programs associated with their particular faith, interested individuals should consult the appropriate religious leaders in their communities.

The required theological training may be offered by private colleges or seminaries located nearby, or may require study in another province or country. There may be language requirements (e.g. Greek, Hebrew) and students may be expected to do related field work (e.g. chaplaincy or missionary work) during the summer months.

Ordination as a rabbi usually requires five years of prescribed study in a seminary. Seminary entrance requirements include a university degree, a strong background in Jewish Studies and the ability to read Hebrew (and, sometimes, Yiddish). Many seminaries require one year of study in Israel as part of the five year program.

Imam must be graduates of a recognized seminary/institution or have equivalent knowledge and experience endorsed the the Islamic Council of Imams - Canada.

In Alberta, the following public institutions offer non-sectarian bachelor's degree programs in religious studies. These programs do not lead directly to employment as a religious leader, but may provide an acceptable background for theological training.

- **Alliance University College** in Calgary offers:
  - a four year B.Min. degree program in Theology
  - a four year B.Min. degree program with specializations in youth and intercultural studies
  - a three and four year BA in Christian Studies.
- **Canadian Nazarene University College** in Calgary offers a three year BA in Christian Studies. The entrance requirement is an average of at least 60 per cent in five approved Grade 12 subjects including English and a math or second language
- **Canadian University College** in College Heights offers three year and four year BA degree programs in Religious Studies. The entrance requirement is a high school diploma with English 30 and at least three other 30-level courses.
- **Concordia University College of Alberta** in Edmonton offers a three year and a four year BA degree programs in Religious Studies. The admission requirement is an average of at least 60 per cent in English 30 and four other appropriate 30-level subjects.
- **Gardner College - A Centre for Christian Studies** in Camrose offers a three year Bachelor of Religious Studies program and a four year Bachelor of Theology program. The entrance requirement for both programs is a high school diploma or equivalent.
- The **King's University College** in Edmonton offers a three year Pre-Seminary BA program and a three year BA program in Theology. The entrance requirement for both programs is a high school diploma with an average of at least 60 per cent in five Grade 12 subjects including English 30.
- **Newman Theological College** in Edmonton offers a one year Bachelor of Theology program for graduates of the Diploma of Theological Studies program (or equivalent). The entrance requirement for the two year diploma program is a high school diploma.
- **Rocky Mountain College** in Calgary offers a four year BA in Theology, a four year BA in Leadership Development, a three year BRS in Relgious Studies, a two year Christian Leadership diploma program and a one year Christian Discipleship certificate program. The entrance requirement is four matriculation level courses including English with a minimum average of 65 per cent in the four courses.
- **Taylor University College and Seminary** in Edmonton offers a four year Bachelor of Arts in Religion and Theology degree program. The entrance requirement is a high school diploma with an average of at least 60 per cent in English 30 and four approved Grade 12 subjects.
- The **University of Alberta** in Edmonton offers four year BA general and honours degree programs in Religious Studies with specializations in Eastern and Native American religious traditions, thematic studies, and Western religious traditions. The entrance requirement is an overall average of at least 65 per cent in English 30, a 30-level language other than English or Pure Math 30 (or Math 30), and three other approved Grade 12 subjects (Social Studies 30 recommended). The University of Alberta in Camrose also offers degree programs in religious studies.
- The **University of Calgary** offers four year and five year (co-op) BA degree programs in Religious Studies and in Religious Studies and Applied Ethics. The entrance requirement for both programs is a high school diploma with an average of at least 70 per cent in English 30 and four other appropriate Grade 12 subjects.
- The **University of Lethbridge** offers four year Bachelor of Arts and five year combined degree programs in Religious Studies. The entrance requirement is an average of at least 65 per cent in English 30 and three other approved 30-level subjects plus a fifth Grade 12 subject.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Other Requirements

Religious leaders must have the endorsement of their religious orders.

Employment and Advancement

(section revised JANUARY 2006)

Religious leaders may work in:

- urban or rural communities in Canada
- overseas missions in developing countries
- inner city missions
- chaplaincies in prisons, hospitals, the Canadian Forces or post-secondary institutions.

Experienced religious leaders may advance to administrative roles in larger religious community units or religious institutions. With additional education, they may also move into social work, counselling, nursing, journalism or teaching (in schools or post-secondary institutions).

Religous leaders are part of the larger National Occupational Classification 4154: Ministers of Religion. In Alberta, most people employed in this classification work in the **Repair, Maintenance, Personal and Other Services** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Repair, Maintenance, Personal and Other Services industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 3,300 Albertans are employed in the Ministers of Religion occupational group which is expected to grow 0.5 to 1.5 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 10 to 50 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since religious leaders form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for religious leaders.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Employment demand varies among different religious communities.

Salary

(section revised OCTOBER 2005)

Salaries for religious leaders may vary considerably between faiths and within some faiths. A house or housing allowance may be provided.

Depending on the religious community, religious leaders may be paid significantly less than people in other occupations that require comparable levels of education. Some leaders enhance their incomes through additional fees charged for officiating ceremonies.

According to the **2005 Alberta Wage and Salary Survey**, part-time or full-time starting salaries for Albertans working in the Ministers of Religion occupational group ranged from **$13,900 to $117,800 a year.** The average salary was **$42,100 a year**.

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Related High School Subjects

Financial Management; Language Arts; Languages (other than English); and Social Studies

Related Post-Secondary Fields of Study

Social Sciences, Law and Religious Studies

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Reporter

Produced MAY 2005

Reporters gather information and write articles for print media (newspapers and magazines) or prepare news items (written, audio or videotaped) for broadcast on radio or television.

NOC Number(s): 5123
Minimum Education: 2 years post-secondary education/training
Employment Outlook: Employment turnover plus below average occupational growth in Alberta
Interests: I S M

Duties

Reporters in the print and broadcast media make information about local, national and international events readily available to the public. In general, they:

- research and verify information found in documents and from meetings, interviews, conferences, court hearings, artistic performances, sporting events and press statements
- interview, in person or by telephone, individuals involved in news events, witnesses, knowledgeable people and others whose activities are of public interest
- go "live, on location" to provide eyewitness coverage of some events
- translate complex issues into concise, informative news stories
- research and write articles or stories as assigned by editors or find stories on their own initiative
- write news stories that are accurate, fair and balanced
- write critical reviews of literary or artistic works based on personal knowledge, judgment and experience
- produce concise written copy from notes or tape recordings taken during interviews or press conferences
- organize material into factual or analytical reports.

Newspaper reporters use computers to compose and edit text, and send copy to an editor or the news wire (in the case of a wire service).

Novice reporters and those working for small weekly newspapers may be given a variety of assignments including taking photographs, writing headlines and captions, laying out pages, editing wire service copy, and writing editorials or columns in addition to covering all aspects of local news. With experience, they may progress to:

- general reporting or covering a beat (a particular news area such as police, city hall or law courts)
- writing more analytical material or syndicated columns which may be distributed to a large group of newspapers or magazines
- producing syndicated audio or video reports for subscribing radio or television stations
- reporting for news services which provide printed material to subscribing newspapers and magazines.

Magazine reporters may do extensive in depth research because magazines have relatively specialized readerships. Some magazine reporters work on a freelance basis.

Broadcast reporters often report live from the scene of a news event, composing their story on the spot. They also may:

- obtain video footage of current news events
- gather sound and video for news, current affairs programs and documentaries
- conduct interviews using digital or tape recorders
- write and edit their own reports under the supervision of a news editor or director
- assist in directing camera operators who are filming news events.

In smaller radio and television stations, broadcast reporters may operate electronic equipment such as television cameras, broadband links, and audio and video editing machines and software.

Online producers (reporters) write stories for websites that may include audio, video and print components. They may write original stories or adapt traditional news items.

For information about **photojournalists**, see the Photographer occupational profile.

Working Conditions

Print, broadcast and online reporters must cope with a hectic pace, the pressure of deadlines, unhelpful news sources, long irregular hours and a work environment filled with noise, interruptions and distractions. Some assignments (e.g. covering wars or natural disasters) are dangerous.

Personal Characteristics

Print and broadcast reporters need the following characteristics:

- strong interviewing skills
- an interest in people and current events
- initiative, curiosity, persistence, resourcefulness, objectivity, integrity, creativity and an accurate memory
- the physical and emotional stamina required to cope with the pressures of their competitive, fast-paced jobs
- the ability to present facts and opinions clearly, concisely, logically and coherently in a style free of grammatical and spelling errors
- a willingness to keep abreast of current events and developments.

In addition, broadcast media reporters require:

- composure and poise on camera or in front of a microphone
- fluency in another language or some knowledge of the pronunciation of other languages
- formal voice training.

All reporters should enjoy finding novel approaches to stories, dealing with people, stimulating interest in news stories and taking a methodical approach to compiling information.

Educational Requirements

There are no standard formal education requirements for reporters but employers generally prefer to hire applicants who have a related degree. Reporters need detailed knowledge of the geography, history, economy, politics, media law and social life of the communities and countries in which they work. For writing critical reviews and analyses, they also need specialized knowledge in a particular area such as art or politics. Computer and Internet research skills are essential; notetaking skills are an asset.

For newspaper and magazine reporters, practical experience on school publications or small rural weeklies is extremely valuable. Large daily newspapers usually require their reporters to have at least three years of practical experience at another daily newspaper.

For broadcast reporters, experience in radio or television stations is essential. Many broadcast reporters begin in small rural or local cable stations as volunteers or through a work experience component of a post-secondary education program.

Online producers must be able to work with technical people, have some knowledge of website programming and content management systems, and be able to use digital cameras and video equipment.

Post-secondary institutions throughout Alberta offer three year and four year Bachelor of Arts (BA) degree programs in communications, Canadian studies, economics, political science and history. In general, entrance requirements include a high school diploma with a specified minimum average (60 to 80 per cent depending on the program) in English Language Arts 30-1 (or equivalent) and four other appropriate Grade 12 subjects (e.g. Social Studies 30, Pure or Applied Math 30, a second language). Specific course requirements vary.

The following Alberta post-secondary institutions offer programs in journalism, broadcasting or communications:

- **Athabasca University** offers a two year Bachelor of Professional Arts degree program by distance education. Applicant must hold a recognized two or three year diploma in a related field.
- **Grant MacEwan College** in Edmonton offers a two year Journalism diploma program and a four year Bachelor of Applied Communications in Professional Writing degree program. The entrance requirement for both programs is a high school diploma or equivalent with at least 65 per cent in English Language Arts 30-1 and four other Grade 12 courses selected from specified groups.
- **Lethbridge Community College** offers a two year Communication Arts diploma program. The entrance requirement is at least 60 per cent in English Language Arts 30-1 (or 70 per cent in ELA 30-2, or equivalent) and Social Studies 30.
- **Mount Royal College** in Calgary offers a Broadcasting diploma program and a four year Bachelor of Applied Communications degree program with a specialization in journalism. The entrance requirement for the

Broadcasting program is an average of at least 60 per cent in English Language Arts 30-1 or 30-2 and four other appropriate Grade 12 subjects, and successful completion of the Watson-Glazer Critical Thinking Test. The entrance requirement for the journalism degree program is an average of at least 60 per cent in English Language Arts 30-1, Social Studies 30 and three other appropriate Grade 12 subjects.

- The **Northern Alberta Institute of Technology (NAIT)** in Edmonton offers a two year Radio and Television diploma program. The entrance requirement is a high school diploma with 60 per cent in English Language Arts 30-1 or 30-2, and at least 50 per cent in Grade 11 math, science and social studies.
- The **Southern Alberta Institute of Technology (SAIT)** in Calgary offers a two year Journalism diploma program with specializations in photojournalism or print media, and a two year Cinema, Television, Stage and Radio diploma program with a specialization in broadcast news. The entrance requirement for both programs is a high school diploma or equivalent with at least 60 per cent in English Language Arts 30-1 or 30-2 (or equivalent).
- The **University of Calgary** offers a four year Bachelor of Arts degree program in Communications Studies. Entrance requirements include English Language Arts 30-1, Pure or Applied Math 30 or Math 31, and three of the following: Biology 30, Chemistry 30, Physics 30, Science 30, Social Studies 30, a language other than English, one five credit Grade 12 subject.

Post-secondary institutions throughout the province offer university transfer programs that allow students to apply up to two years of study toward Bachelor's degree programs at other institutions. It is the student's responsibility to ensure that the courses they choose to take will be accepted for credit at the institution to which they wish to transfer.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

(section revised JANUARY 2006)

Competition for entry-level reporter jobs is keen. Employment prospects may be better for those who specialize in a particular field, combine writing with other skills (e.g. research, languages, business) or are willing to relocate.

New graduates often are employed in one or more contract or temporary positions before they find full-time positions with benefits. When they have more experience, they may move to a larger station or publication. Experienced reporters may advance to editorial positions in print media or become news anchors or producers in broadcast media.

Good writing skills also can be applied in related occupations such as technical writer, advertising copywriter, public relations worker, media consultant, legislative aide or advisor, educational writer, fiction writer, biographer, screen writer or editor. For more information, see the Advertising Copywriter, Creative Writer, Editor, Public Relations Representative and Technical Writer occupational profiles.

Reporters are part of the National Occupational Classification 5123: Journalists. In Alberta, most people employed in this classification work in the **Information, Culture and Recreation** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Information, Culture and Recreation industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 1,600 Albertans are employed in the Journalists occupational group which is expected to grow 0.5 to 1.5 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Salaries for reporters in the magazine industry vary tremendously because they generally work on a freelance basis and are paid a fee for each individual article.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Journalists occupational group working part-time or full-time earned from **$18,900 to $59,300 a year.** The average salary was **$43,100 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Canadian Association of Journalists (CAJ) website: www.caj.ca

Related Occupational Profiles

Announcer
Critic
Editor
Photographer
Technical Writer

Related High School Subjects

Communication Technology; Information Processing; Language Arts; Languages (other than English); Legal Studies; Mathematics; Physical Education; and Social Studies

Related Post-Secondary Fields of Study

Communications; Humanities and Languages; and Social Sciences, Law and Religious Studies

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For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Respiratory Therapist

Produced JANUARY 2005

Respiratory therapists assist physicians in diagnosing, treating, educating and promoting wellness in patients who have respiratory and associated disorders.

NOC Number(s): 3214.1
Minimum Education: 3 years post-secondary education/training
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: **O M i**

Duties

Respiratory therapists work with patients of all ages who have breathing problems associated with acute and chronic heart and lung disorders (e.g. asthma, cystic fibrosis, emphysema), sleep disorders, heart disease, trauma, high risk deliveries or organ system failures (e.g. kidney disease, diabetes, neurological disorders).

In general, respiratory therapists:

- assess patients' respiratory systems and perform breathing tests and blood gas tests
- develop respiratory treatment plans and evaluate patient progress
- work with physicians, nurses and other health care professionals in managing patient care
- administer medical gases and medications by aerosol therapy to manage and control breathing-related abnormalities
- educate patients about their conditions and teach appropriate disease management techniques including how to use their medications and respiratory equipment
- provide continuous mechanical ventilation, monitor life signs and assist with cardio-pulmonary resuscitation during the transportation of critically ill patients and in emergency departments, intensive care units and operating rooms
- maintain and insert a variety of artificial airways
- operate, inspect, maintain and calibrate respiratory equipment (oxygen equipment, humidifiers, ventilators, anaesthetic machines and blood gas analyzers) and other life support systems
- keep records of the therapies and services provided.

Working Conditions

Respiratory therapists may care for patients in clinical settings or provide consultative and community services. Since patients may experience breathing problems at any time of the day or night, respiratory therapists in clinical settings may work shifts including nights, weekends and holidays. Some therapists work on-call and travel to assess and follow-up with patients.

Respiratory therapists may spend the majority of their working hours on their feet. Most have to do some lifting (up to 10 kg) but the amount of lifting required is dependent on where they work. Some may routinely help to lift immobile patients. Therapists working in emergency or intensive care units or in patients' homes may experience high levels of stress.

Personal Characteristics

Respiratory therapists need the following characteristics:

- good communication skills
- compassion and an interest in caring for others
- good organizational and problem solving skills
- critical thinking skills
- the ability to act quickly in crisis situations

- the ability to work effectively independently and in a team.

The should enjoy using equipment to perform tasks requiring precision, having clear guidelines and organized methods, and dealing with people.

Educational Requirements

In Alberta, the following technical institutes offer three year programs in Respiratory Therapy.

- The **Northern Alberta Institute of Technology (NAIT)** in Edmonton offers a Respiratory Therapy diploma program in conjunction with hospitals in the Capital Health Authority and Caritas Health Group and other agencies. The program includes clinical practicums in second and third year. The entrance requirement is a high school diploma or equivalent with at least 60 per cent in English 30, Biology 30, Math 30 or 31 or Pure Math 30, and Chemistry 30. Current First Aid and CPR certificates are also required.
- The **Southern Alberta Institute of Technology (SAIT)** in Calgary offers a Respiratory Therapy diploma program in conjunction with hospitals in southern Alberta. The program includes 10 months of clinical experience. The entrance requirement is a high school diploma or equivalent with an average of at least 60 per cent in English 30 or 33; Pure or Applied Math 30 or Math 31; Biology 30 and Chemistry 30. Physics 30 is recommended. Immunization is required.

Both of these programs are quota programs so admission is competitive. Higher marks are generally required to gain admission.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Other Requirements

Under Alberta's Health Disciplines Act and Respiratory Therapists Regulation, only registered members of the College and Association of Respiratory Therapists of Alberta (CARTA) may call themselves Respiratory Therapists. Registered members provide health services listed in the Regulation.

Employment and Advancement

(section revised JANUARY 2006)

Respiratory therapists work in:

- hospitals
- diagnostic laboratories
- community and home care programs (public and private)
- educational institutions
- research facilities
- pharmaceutical companies
- medical equipment sales and service companies
- community clinics.

In large urban hospitals, therapists may work in emergency departments, intensive care units, intensive care nursery units, chronic cardiopulmonary disease units, outpatient departments, operating theatres and recovery rooms, medical and surgical floors, pediatric units, caserooms and newborn nurseries, pulmonary functions and blood-gas diagnostic areas or in rapid transport of critically ill patients.

Experienced respiratory therapists may advance to clinical specialist or supervisory positions. Without additional education, other opportunities for advancement are limited.

Respiratory therapists are part of the larger National Occupational Classification 3214: Respiratory Therapists, Clinical Perfusionists and Cardio-Pulmonary Technologists. In Alberta, most people employed in this classification work in the **Health Care and Social Assistance** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including

- trends and **events** affecting overall employment (especially in the Health Care and Social Assistance industry),
- **location** in Alberta,
- **employment turnover** (work opportunities generated by people leaving existing positions),
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before), and

- **size of the occupation.**

Over 1,000 Albertans are employed in the Respiratory Therapists, Clinical Perfusionists and Cardio-Pulmonary Technologists occupational group which is expected to grow 2.7 to 3.7 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 20 to 40 **new** positions will be created each year **in addition** to job openings created by employment turnover. Most of these new positions will be for respiratory therapists.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

In 2003, Albertans in the Respiratory Therapists, Clinical Perfusionists and Cardio-Pulmonary Technologists occupational group earned from **$36,600 to $60,500 a year.** The average salary was **$51,000 a year** (2003 Alberta Wage and Salary Survey).

For information about current collective agreements in the public and not-for-profit sectors, see the Health Sciences Association of Alberta (HSAA) website.

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

College and Association of Respiratory Therapists of Alberta (CARTA) website: www.carta.ca

Canadian Society of Respiratory Therapists (CSRT) website: www.csrt.com

Health Sciences Association of Alberta (HSAA) website: www.hsaa.ca

Related Occupational Profiles

Community Health Nurse
Diagnostic Medical Sonographer
Occupational Health Nurse
Radiation Therapist
Registered Nurse

Related High School Subjects

Community Health; Language Arts; Mathematics; Physical Education; and Science (Biology; and Chemistry)

Related Post-Secondary Fields of Study

Health Care and Medical Sciences

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Restaurant Manager

Produced MARCH 2003

Restaurant managers plan, organize, direct and control the operation of establishments in which food and beverages are served.

NOC Number(s): 0631
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **D M S**

Duties

The specific duties performed by restaurant managers depend on the nature of the establishments they manage. In general, however, restaurant managers:

- consult with chefs to select menu items that will appeal to customers and make efficient use of food supplies, and assign prices to menu items
- design wine and liquor lists appropriate to menus
- estimate supplies needed, order supplies and deal with food, beverage and equipment suppliers and their representatives
- recruit and train new employees, schedule work hours and keep employment records
- oversee the daily operations of the restaurant to ensure health and safety regulations and policies are met
- ensure that maintenance and decor standards are maintained
- supervise restaurant staff
- maintain friendly contact with customers and resolve customer complaints
- develop marketing strategies and supervise advertising campaigns
- track the overall profitability of the restaurant and forecast revenues
- prepare budgets and manage finances, including maintaining records of costs and payments made to suppliers, balancing daily cash received with records of sales, and depositing daily income for safekeeping.

In large restaurants or hotel chains, restaurant managers may delegate many tasks to other employees such as assistant managers or executive chefs. In smaller restaurants, executive chef and restaurant manager positions may be combined. In fast food restaurants and other food service facilities, restaurant managers may have several assistant managers, each of whom supervises a different shift.

Working Conditions

The working conditions for restaurant managers are as varied as the establishments they operate. Evening and weekend work is common. The work can be hectic during peak dining hours and dealing with customer complaints or problem employees can be stressful.

Personal Characteristics

Restaurant managers need the following characteristics:

- the interpersonal skills required to deal effectively with employees and customers
- the ability to remain calm and solve unexpected problems
- excellent communication skills, both in person and in writing
- the stamina and self-discipline required to work long hours when necessary
- good organizational skills
- the ability to develop marketing ideas for attracting and retaining customers.

They should enjoy co-ordinating information and the activities of others; setting work schedules, monitoring staff and controlling inventory; and dealing with suppliers and customers.

Educational Requirements

(section revised FEBRUARY 2006)

The best background for restaurant managers is **a combination of experience and education in the field.** Computer skills (for working with point of sale systems) and the ability to speak a second language are definite assets.

It is still possible to work from the bottom up in restaurant management if on the job training is supplemented with further education. Some large restaurant chains sponsor their own management training programs. However, employers may prefer to hire applicants who already have related post-secondary education.

In Alberta, the following institutions offer post-secondary programs related to the supervision and management of hospitality services.

- **Lethbridge Community College** offers a two year diploma program in Hotel and Restaurant Management. The entrance requirement is a high school diploma or equivalent with credit in English 30 or 33, Math 30 or 33 or Applied Math 30 or Pure Math 30.
- The **Northern Alberta Institute of Technology** in Edmonton offers a:
    - one year certificate and a two year Hospitality Management diploma program. The minimum education requirement for both programs is Grade 11 including English and math.
    - two year Food and Nutrition Management diploma program. The entrance requirement for this program is a high school diploma with English 30 or 33, Math 20 or 23, Biology 20 or 30 and any other 30 level science.
- **Red Deer College** offers one year certificate and two year diploma programs in Hospitality and Tourism with a specialization in food and beverage management. The entrance requirement is a high school diploma or equivalent.
- **Robertson College** offers a 40-week International Hospitality and Hotel Management program. The entrance requirement is a high school diploma with a Grade 12 English.
- The **Southern Alberta Institute of Technology** in Calgary offers a two year plus three month internship diploma program in Hotel and Restaurant Management. The entrance requirement is a high school diploma or equivalent with English 30 or 33 and Pure or Applied Math 30.
- **Training Inc.**, a private vocational school in Lethbridge, offers a 12 week Hotel and Restaurant Operations program. Applicants must be contact the school for entrance requirements.
- **Trend College**, a private vocational school in Edmonton, offers a 34-week Hotel and Tourism Management Studies program and a 50 week International Hotel and Tourism Management Studies program. Applicants must be at least 19 years of age, undergo a personal interview and have a high school diploma or equivalent qualifications.
- The **University of Calgary** Haskayne School of Business offers a four year Bachelor of Hotel and Resort Management (BHRM) degree program that may also be taken as a five year co-op program. The entrance requirement is a high school diploma with an overall average of at least 70 per cent in English 30, Math 30, and three other appropriate Grade 12 subjects, and a SAIT diploma in Hotel and Restaurant Management (or equivalent) with a grade point average of 3.0/4 or above. The University of Calgary also offers four year and five year co-op Bachelor of Commerce (B.Comm.) degree programs in Tourism and Hospitality Management.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Post-secondary institutions throughout the province offer university transfer programs that allow students to apply up to two years of study toward university bachelor degree programs. It is the student's responsibility to ensure that the courses they choose to take will be accepted for credit at the institution to which they wish to transfer.

The **Alberta Tourism Education Council (ATEC)** offers one-day staff seminars and two-day management seminars in service excellence which may benefit restaurant managers.

Employment and Advancement

(section revised JANUARY 2006)

Most restaurant managers are employed in privately owned restaurants, clubs and hotels. Many own their establishments.

Restaurant managers who have related post-secondary education usually advance relatively quickly and may qualify for further advancement to district manager and top executive positions in large organizations. They may also move into sales representative positions for food service supply companies or become managers of private clubs.

Restaurant managers are part of the larger National Occupational Classification 0631: Restaurant and Food Service Managers. In Alberta, most people employed in this classification work in the **Accommodation and Food Services** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Accommodation and Food Services industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 13,800 Albertans are employed in the Restaurant and Food Service Managers occupational group which is expected to grow 1.5 to 2.5 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 200 to 350 **new** positions will be created each year **in addition** to job openings created by employment turnover.(**Note**: Since restaurant managers form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for restaurant managers.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised SEPTEMBER 2005)

Salaries for restaurant managers vary a great deal, depending on the size, location and volume of business of the restaurant. Incomes for restaurant managers who own their own restaurants vary even more widely.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Restaurant and Food Service Managers occupational group working part-time or full-time earned from **$13,000 to $179,900 a year.** The average salary was **$30,900 a year.**

Other Sources of Information

(section revised OCTOBER 2005)

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Hotel and Lodging Association website: www.albertahotels.ab.ca

Alberta Restaurant and Foodservices Association website: www.arfa.net

Alberta Tourism Education Council (ATEC) website: www.atec.ca

Canadian Food Service Executives Association website: www.cfsea.ca

Related Occupational Profiles

Accommodation Manager
Banquet Manager
Bartender
Caterer
Dietitian
Food and Beverage Service Supervisor In Formal Dining Rooms
Food Service Supervisor

Related High School Subjects

Community Health; Enterprise and Innovation; Financial Management; Foods; Information Processing; Language Arts; Languages (other than English); Logistics; Management and Marketing; Mathematics; Physical Education; Science (Biology); and Tourism Studies

Related Post-Secondary Fields of Study

Business, Management and Administrative Studies; and Personal and Food Services

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Retail Salesperson

Produced SEPTEMBER 2003

Retail salespersons sell or rent goods and services to customers in stores and other retail businesses.

NOC Number(s): 6421
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **M S d**

Duties

Retail salespersons work in many different types of retail establishments, assisting customers with the selection and purchase of merchandise. In specialty stores, they sell or rent merchandise ranging from books, food and clothing to major appliances, stereos and automobiles. In large department stores, they usually work in specific departments. In smaller owner-managed stores, salespersons are responsible for serving customers in all areas of the store.

Their first and foremost responsibility is to sell merchandise and ensure customer satisfaction. To accomplish this objective, salespersons may:

- greet customers and assist them in identifying their needs (e.g. the size of shoe or refrigerator they need)
- demonstrate, fit or measure merchandise for customers and promote products such as credit card services
- advise customers on the use and care of merchandise
- answer questions regarding the store and its merchandise
- process payments (cash, cheques, direct debit and charge cards) and provide sales receipts
- assist customers with returns and exchanges of merchandise
- wrap customer purchases or arrange for delivery
- estimate or quote prices, credit terms, trade-in allowances and warranties
- check and order stock
- stock shelves and maintain display areas.

Salespersons must be aware of current store sales promotions, policies regarding payment and exchanges, and store security practices. They may be required to develop new markets by soliciting new business when they are not busy serving customers.

Salespersons are often solely responsible for the contents of the cash register and, at the end of their shift, may:

- count money in the cash register
- separate charge slips, coupons and exchange vouchers
- make deposits at a cash office or financial institution.

Working Conditions

Salespersons usually work indoors in pleasant surroundings, often in shopping malls. They must stand or walk for long periods of time and may be required to routinely lift items weighing up to 10 kilograms. Having to meet sales targets, sometimes sales per hour targets, can be stressful.

Many salespersons work part-time shifts. Evening, weekend and holiday work is common. Some salespersons are required to wear uniforms and most wear identification pins.

Personal Characteristics

Retail salespersons need the following characteristics:

- good health
- a neat, well-groomed appearance
- the ability to perform arithmetic calculations quickly and accurately

- an awareness of current fashion trends and customer tastes
- the ability to remain courteous, patient and tactful when dealing with difficult customers
- the ability to work under pressure.

They should enjoy having clear rules and organized methods for their work, persuading people to buy or rent merchandise and handling merchandise.

Educational Requirements

There are **no standard education requirements** for retail salespersons; however, most employers prefer to hire high school graduates. Those who have post-secondary education have a greater opportunity for advancement to supervisory and management positions, particularly if they are located near the head offices of larger firms.

Salespersons who sell expensive or complex merchandise may require special knowledge or skills. For example, those who sell computer systems must have at least a basic knowledge of electronics and computer software or hardware to be able to answer customer questions.

Small shops train staff on the job; larger stores may have their own in-house training programs.

Employment and Advancement

(section revised JANUARY 2006)

Many salespersons are employed on a part-time basis.

Advancement is based on experience and job performance. Experienced salespersons may move to busier stores, supervisory and management positions, or related departments such as staff training or customer relations. With additional education and training, they may move into related occupations such as purchaser, human resources officer, real estate agent or insurance agent.

There are more opportunities for advancement in large department stores or within retail chains or multi-store operations. Those in smaller stores may be required to change employers to find jobs with broader responsibilities.

Retail salespersons are part of the larger National Occupational Classification 6421: Retail Salespersons and Sales Clerks. In Alberta, most people employed in this classification work in the **Retail Trade** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Retail Trade industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

About 62,550 Albertans are employed in the Retail Salespersons and Sales Clerks occupational group which is expected to grow 1.3 to 2.3 per cent each year from 2005 to 2010 in Alberta. It is forecasted that over 600 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since retail salespersons form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for retail salespersons.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Wages vary greatly depending on the size and nature of the store and the salesperson's experience. Many retail salespersons start at **minimum wage** and their wages increase with experience. Some earn bonuses or commissions based on sales in addition to a base salary. Some work on a commission only basis. They may receive employee discounts on merchandise.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Sales Retail Salespersons and Sales Clerks occupational group working part-time or full-time earned from **$10,400 to $154,800 a year.** The average salary was **$25,900 a year.**

Other Sources of Information

Retail Merchants' Association of Canada (Alberta) Inc. website: www.albertarma.org

Related Occupational Profiles

Call Centre Agent
Cosmetician
Direct Distributor
Floral Designer
Interior Decorator
Optician
Postal/Wicket Clerk
Real Estate Agent
Retail Shelf Stocker
Retail Store Manager
Sales Representative (Wholesale, Nontechnical)
Telemarketer

Related High School Subjects

Language Arts; Mathematics; and Physical Education

Related Post-Secondary Fields of Study

Personal and Food Services

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Retail Shelf Stocker

Produced SEPTEMBER 2003

Retail shelf stockers unpack and price merchandise and stock shelves and displays. They may also pack customers' purchases.

NOC Number(s): 6622
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **M s o**

Duties

Shelf stockers are employed in a wide variety of retail outlets and their duties vary somewhat depending on the size and type of store. In general, however, they:

- unpack products received by stores and may count, weigh or sort items
- check shipping and purchasing documents to ensure that the proper items and amount have been received and that items have not been damaged or spoiled
- stock shelves, racks and display areas with merchandise and store extra items in stockrooms
- regularly check shelves and displays to ensure that they are well-stocked, attractively organized and merchandise is protected from damage
- obtain articles for customers from display locations or from the stockroom
- direct customers to desired items and anticipate customer needs as much as possible
- report out-of-stock situations to management and correct or report any pricing discrepancies
- clean up broken items and other messes
- sweep aisles, dust display racks and perform other general cleaning duties.

Shelf stockers who work in grocery stores may also:

- maintain displays of perishable items such as produce or dairy products by rotating items to keep the freshest in the back or on the bottom
- bag or box purchases for customers
- carry or use carts to carry customers' purchases out to the parking lot and help customers pack groceries into their vehicles.

Shelf stockers working in other large retail outlets may:

- use bar-code scanning equipment to record incoming stock, verify pricing and maintain a computerized stock inventory
- wrap items such as sound recordings in cellophane
- attach protective devices to merchandise to protect against shoplifting.

Those working in smaller stores may:

- use a stamp or stickers to price items according to price lists
- sweep or shovel snow from the sidewalk in front of the store
- act as cashiers (see the Cashier profile for more information).

Working Conditions

Hours of work vary in this occupation. Some grocery shelf stockers work in the middle of the night when there are few or no customers in the store. Weekend work is common.

Shelf stockers spend most of their time on their feet. Their work routinely involves bending and lifting items weighing up to 25 kilograms. Working conditions are generally pleasant, although stock rooms may be dusty. Some stores require shelf stockers to wear uniforms and/or personal safety equipment such as steel-toed shoes.

Personal Characteristics

Shelf stockers need the following characteristics:

- the strength and stamina required to lift heavy boxes and work long hours on their feet
- good motor co-ordination and manual dexterity
- honesty
- the ability to work with little or no supervision
- good organizational skills
- the ability to get along well with others.

They should enjoy having clear rules and organized methods for their work, serving and assisting customers and handling merchandise.

Educational Requirements

Shelf stockers are **trained on the job**. Employers often hire students for part-time positions but generally prefer to hire high school graduates for full-time jobs.

Union membership is a requirement of employment in some places of employment.

Employment and Advancement

(section revised JANUARY 2006)

Most shelf stockers are employed in grocery stores and department stores. Some are employed in drug stores, hardware stores and other specialty stores (e.g. large book stores, shoe stores).

Students are often hired for part-time evening and weekend positions, or for temporary positions during busy periods (e.g. the Christmas season). Those who succeed in this entry-level position may advance to other more responsible positions.

Retail shelf stockers are part of the larger National Occupational Classification 6622: Grocery Clerks and Store Shelf Stockers. In Alberta, most people employed in this classification work in the **Retail Trade** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Retail Trade industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation**.

About 13,850 Albertans are employed in the Grocery Clerks and Store Shelf Stockers occupational group which is expected to grow 1.2 to 2.2 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 160 to 310 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since retail shelf stockers form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for retail shelf stockers.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Hourly wages for shelf stockers vary considerably depending on the employer and the worker's experience and responsibilities.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Grocery Clerks and Store Shelf Stockers occupational group working part-time or full-time earned from **$9,400 to $33,300 a year.** The average salary was **$15,600 a year.**

Other Sources of Information

Retail Merchants' Association of Canada (Alberta) Inc. website: www.albertarma.org

Related Occupational Profiles

Cashier
Retail Salesperson
Retail Store Manager
Shipper and Receiver
Warehousing Professionals

Related High School Subjects

Management and Marketing; and Physical Education

Related Post-Secondary Fields of Study

Personal and Food Services

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Retail Store Manager

Produced OCTOBER 2003

Retail store managers plan, organize, direct and control the operations of stores that sell merchandise and services to the public. They may be employees or self-employed.

NOC Number(s): 0621
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus below average occupational growth in Alberta
Interests: **D M i**

Duties

Retail store managers manage retail outlets such as department stores, supermarkets, car dealerships and specialty boutiques. Their primary responsibility is to ensure that their businesses make a profit.

Specific duties vary depending on the size and nature of the business but, in general, store managers:

- supervise the day-to-day operations of the store
- supervise department managers or directly supervise staff, set up work schedules and assign duties
- determine staffing requirements, hire or oversee the hiring of staff and, when necessary, dismiss employees
- train new employees or arrange for training
- administer budgets and authorize financial transactions
- monitor product inventories and trends in consumer buying to anticipate which products will be in demand
- implement or administer price and credit policies
- monitor anti-theft procedures and policies, and take appropriate action when thefts occur
- oversee security measures, including ensuring that doors and safes are locked and alarms are set, and answering calls from security companies and the police in case of break-ins
- monitor the outside of the building and make sure safety hazards such as hanging ice are removed
- provide assistance when employees are unusually busy
- deal with customer complaints and recommendations.

Store managers may also:

- organize staff safety programs
- locate and select merchandise for resale
- meet with manufacturers' sales representatives to discuss product lines
- co-ordinate activities in various store departments
- develop and implement marketing strategies
- decide how merchandise should be displayed
- meet other store managers or shopping mall managers to discuss issues of common concern (e.g. mall policies)
- write and authorize reports to head office.

Working Conditions

Store managers work indoors in pleasant surroundings. They are on their feet most of the time and often work long hours, evenings and weekends, particularly if they are self-employed. Managers employed by chain stores may be required to move frequently, especially during their initial years with the company.

Personal Characteristics

Retail store managers need the following characteristics:

- good oral and written communication skills
- strong organizational skills
- the ability to motivate and lead staff

- good business sense
- the ability to work well under pressure and deal with unexpected situations calmly and effectively
- the ability to get along with all kinds of people.

They should enjoy taking charge of situations, having clear rules and guidelines for their work and negotiating with people.

Educational Requirements

Employers generally require managers to have **several years of previous experience in the retail industry.** Many employers also require applicants to have related post-secondary education. Some large retail chains have in-house management trainee programs and only promote managers from within the company.

In-house training programs vary from employer to employer. Many national chains have programs that include both classroom and in-store training. On the other hand, some retail organizations have no formal training program.

Part-time and full-time post-secondary programs related to business administration, management and entrepreneurship are offered by colleges, technical institutes and universities throughout the province. Admission requirements vary from one program to another but generally include a high school diploma with Grade 12 English and math courses. For information about marketing programs in particular, see the Marketing Manager occupational profile.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Entrepreneurs are strongly advised to take small business training programs, work in a store similar to one they would like to own and conduct a detailed market study before investing in an existing retail business or establishing a new one.

Employment and Advancement

(section revised JANUARY 2006)

Retail store managers work in communities and retail organizations of all sizes. Competition for entry-level management positions is often keen.

Managers of retail chain stores may be promoted to larger stores, regional management positions or management positions in specific areas such as materials acquisition. Advancement opportunities are best for those who have related post-secondary education.

Retail store managers are part of the larger National Occupational Classification 0621: Retail Trade Managers. In Alberta, most people employed in this classification work in the **Retail Trade** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Retail Trade industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 37,000 Albertans are employed in the Retail Trade Managers occupational group which is expected to grow 0.7 to 1.7 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 250 to 630 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since retail store managers form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for retail store managers.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised SEPTEMBER 2005)

Salaries for retail store managers **vary greatly** depending on their experience and qualifications, and the nature of the business. When they are starting a new business or during economically depressed periods, self-employed managers may make very little. However, there is no income ceiling for successfully established entrepreneurs.

Salaries for store managers employed by others do not vary quite as dramatically but still differ widely.

According to the **2005 Alberta Wage and Salary Survey**, part-time or full-time starting salaries for Albertans working in the Retail Trade Managers occupational group ranged from **$12,900 to $125,700 a year.** After three years, salaries ranged from **$15,300 to $190,500 a year.** The average salary was **$47,300 a year**.

Other Sources of Information

Canadian Retail Institute website: www.retaileducation.org

Retail Council of Canada website: www.retailcouncil.org

Retail Merchants' Association of Canada (Alberta) Inc. website: www.albertarma.org

Related Occupational Profiles

Human Ecologist
Human Resources Professional
Marketing Manager
Retail Salesperson
Retail Shelf Stocker

Related High School Subjects

Enterprise and Innovation; Fashion Studies; Financial Management; Fine Arts (Visual Arts); Language Arts; Legal Studies; Logistics; Management and Marketing; Mathematics; Physical Education; and Social Studies

Related Post-Secondary Fields of Study

Business, Management and Administrative Studies; and Personal and Food Services

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For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Rig Technician

Apprenticeship and Industry Training

Produced JULY 2005

Rig technicians operate oil and gas drilling rigs. This newly defined trade has three journeyman certification levels commonly known as motorhand (level 1), derrickhand (level 2) and driller (level 3).

NOC Number(s): 8232.1, 8412.1
Minimum Education: Apprenticeship Trade
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: **O D m; O M d**

Duties

Drilling rigs drill the initial holes for oil and gas wells. Each rig consists of a derrick, draw-works and other surface equipment that provide the force required for drill pipe to bore a hole into the earth. After a drilling rig reaches the layer of earth that contains oil or gas, well casing is installed and the rig is dismantled and moved to another site.

Motorhands (Rig Technician Level 1):

- regularly maintain drilling rig engines, transmissions, heating systems, diesel electric generators and motors, hydraulic systems and other mechanical equipment
- maintain equipment logs and preventative maintenance records
- monitor inventories of fuels, oil filters, lube oils, greases and other service items
- work under the direction of the derrickhand and driller
- supervise, train and work with floorhands and laborers, ensuring they work safely and efficiently
- participate in rig mobilization and de-mobilization (rig-up and tear-out).

Derrickhands (Rig Technician Level 2):

- operate and maintain drilling fluid systems and pumps during drilling
- mix fluid chemicals and additives as required by the program
- handle sections of drill string assembly from a platform on the rig derrick during tripping operations
- monitor and record mud flows and volumes and fluid properties (mud weight)
- work under the direction of the driller and assist the driller with crew supervision, ensuring the crew works safely and efficiently
- participate in rig mobilization and de-mobilization.

Drillers (Rig Technician Level 3):

- supervise rig crews and the operation of drilling equipment
- ensure crews work safely and efficiently
- report directly to drilling rig managers
- operate the draw-works, rotary equipment and pumps, and supervise the assembly of drill string
- ensure that safety and support equipment is functioning properly
- monitor the progress of drilling operations and communicate with well-site supervisors
- keep a current record of drilling progress
- train crew members
- introduce procedures which may help the crew to work more safely or effectively
- participate in the supervision of rig mobilization and de-mobilization.

Working Conditions

(section revised FEBRUARY 2006)

Working conditions vary with duties, rig locations and weather conditions. Rig technicians often work outdoors where they are exposed to extremes in weather as well as the dirt, dust, noise and fumes common around rigs. They may be required to work two weeks on followed by one week off. Rig technicians may have to travel throughout the province and are often responsible for their own transportation to the work site.

Rig technicians may be required to lift items weighing over 25 kilograms.

Personal Characteristics

Rig technicians need the following characteristics:

- the ability to get along well with co-workers
- leadership and management skills
- good communication skills
- good organizational skills
- physical strength and stamina
- emotional stability
- mechanical aptitude
- manual dexterity
- the ability to judge distances and spatial relationships.

They should enjoy working with equipment and machinery, working in a team environment, and compiling information and maintaining records.

Educational Requirements

(section revised FEBRUARY 2006)

To work in Alberta, level 1 and 2 rig technicians must be ONE of the following:

- registered apprentices
- certified journeymen
- have a Qualification or Equivalency credential.

Level 3 rig technicians must be registered apprentices or certified journeymen.

To **register** with **Alberta Apprenticeship and Industry Training**, apprentices must find a suitable employer who is willing to hire and train an apprentice. Most employers prefer to hire high school graduates and may select apprentices from among their current employees.

The **term of apprenticeship** is three years (three 12 month periods) that include a minimum of 1500 hours of on-the-job training and four weeks (30 hours per week) of technical training each year.

Rig technician apprenticeship technical training and on-the-job training is cumulative for the three levels of certification. Apprentices may opt out of the program after completing one or more periods of the program and qualify for the level of certification related to the highest period completed.

There are three levels of journeyman certification:

- Level 1 Rig Technicians can perform motorhand tasks
- Level 2 Rig Technicians can perform motorhand or derrickhand tasks
- Level 3 Rig Technicians can perform motorhand, derrickhand or driller tasks.

Applicants who have related training or work experience may be eligible for credit or certification.

Technical training is arranged by Alberta Apprenticeship and Industry Training.

Outside of the apprenticeship program, **Enform** (formerly Petroleum Industry Training Service and Canadian Petroleum Safety Council) in Calgary and Nisku (near Edmonton) offers courses for those employed on drilling rigs and pre-employment courses for those wanting to gain experience prior to working in the industry.

Related Post-Secondary Fields of Study

(section revised FEBRUARY 2006)

Rig technicians are employed by oil and gas well drilling contractors. Some rigs operate year round but employment in this occupation may be seasonal. Winter is the busiest season for drilling activity.

Experienced rig technicians may move into rig management or other management positions in the drilling industry. Or they may be hired by specialist companies as mud technicians or directional drillers or move into drilling-related equipment sales or rig training, regulatory or safety positions.

Alberta certified journeyman rig technicians who have the supervisory or management skills required by industry may apply for an Achievement in Business Competencies Blue Seal by contacting Alberta Apprenticeship and Industry Training.

Motorhands and derrickhands are part of the larger National Occupational Classification 8412: Oil and Gas Well Drilling Workers and Services Operators. Drillers are part of the larger National Occupational Classification 8232: Oil and Gas Well Drillers, Servicers, Testers and Related Workers. In Alberta, most people employed in these classifications work in the **Oil and Gas Extraction** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- time of year (for seasonal jobs)
- trends and **events** affecting overall employment (especially in the Oil and Gas Extraction industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 10,350 Albertans are employed in the Oil and Gas Well Drilling Workers and Services Operators occupational group which is expected to grow 2.5 to 3.5 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 250 to 370 **new** positions will be created each year **in addition** to job openings created by employment turnover.

Over 17,600 Albertans are employed in the Oil and Gas Well Drillers, Servicers, Testers and Related Workers occupational group which is expected to grow 2.5 to 3.5 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 440 to 620 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since motorhands, derrickhands and drillers form only a part of the larger occupational groups on which these forecasts are based, only a portion of the new positions created will be for rig technicians.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

According to salary standards for drilling and service rig crews recommended by the Canadian Association of Oilwell Drilling Contractors (CAODC) in October 2005:

- motorhands are paid a base wage of **$25.50 an hour** plus a living or subsistence allowance (from **$25 a day** when in camp to **$100 a day** where there is no camp)
- derrickhands on drilling rigs are paid a base wage of **$30 an hour** plus a living or subsistence allowance (as above)
- drillers earn a base wage of **$36 an hour** plus a living allowance (as above).

Some employers offer bonuses but employment may not be year-round.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the:

- Oil and Gas Well Drillers, Servicers, Testers and Related Workers occupational group working part-time or full-time earned from **$17,800 to $157,000 a year.** The average salary was **$55,100 a year.**
- Oil and Gas Well Drilling Workers and Services Operators occupational group working part-time or full-time earned from **$24,800 to $257,000 a year.** The average salary was **$60,100 a year.**

Other Sources of Information

Alberta Apprenticeship and Industry Training website: www.tradesecrets.org

Post-secondary institution calendars or websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Canadian Association of Oilwell Drilling Contractors (CAODC) website: www.caodc.ca

Small Explorers and Producers Association of Canada (SEPAC) website: www.sepac.ca

Related Occupational Profiles

Drilling and Service Rig Managers
Drilling Rig Leasehand/Floorhand
Oil and Gas Well Loggers and Testers
Service Rig Personnel
Technical Sales Representative
Water Well Driller
Well Service Equipment Operator

Related High School Subjects

Community Health; Energy and Mines; Mathematics; Mechanics; and Physical Education

Related Post-Secondary Fields of Study

Trades, Industrial and Related Training

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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OCC info Alberta Occupational Profiles

Alberta Human Resources and Employment

Roofer

Apprenticeship and Industry Training

Produced FEBRUARY 2006

Roofers prepare and apply protective coverings to flat and sloped roof surfaces.

NOC Number(s): 7291.1
Minimum Education: Apprenticeship Trade - Grade 9
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **M O i**

Duties

On flat roofs of commercial and industrial buildings that are under construction, roofers:

- put a layer of vapour barrier or insulation on the roof deck
- make the surface watertight by spreading hot bitumen (a tar-like substance) over and under layers of roofing felt (fabric soaked in bitumen) or applying single-ply membranes of waterproof rubber or thermoplastic compounds
- install metal or membrane flashing (strips) to protect the edges of roofing materials.

On sloped residential roofs that are covered with shingles made of asphalt, fibreglass, tile, slate, wood shakes or metal, roofers:

- apply plastic coatings and membranes, fibreglass or felt over parts of the surface before applying shingles
- nail shingles in overlapping rows
- cement or nail flashing over the joints around vent pipes or chimneys
- cover exposed nailheads with cement to prevent rust and water leakage.

Roofers may also:

- inspect problem roofs to determine the best procedures for repairing them
- estimate materials required and quote costs
- repair older roofs
- waterproof roofs, basements, foundations, plaza decks or parkades.

Working Conditions

Roofers work outdoors on roofs of varying heights. When the weather is good and there is a lot of building activity, roofers may work considerable amount of overtime. There is some risk of injury due to falling and when working with hazardous hot materials. The heat can be intense for those working with hot bitumen in the summer.

Roofers may be required to lift items weighing over 25 kilograms.

Personal Characteristics

Roofers need the following characteristics:

- strength and stamina
- good sense of balance and the ability to work in high places
- an interest in working outdoors
- able to get along well with co-workers.

They should enjoy physical exercise and working with their hands.

Educational Requirements

To work in Alberta, roofers must be ONE of the following:

- registered apprentices

- certified journeymen
- working for an employer who is satisfied that they have the skills and knowledge expected of certified journeymen
- self-employed.

To **register** with **Alberta Apprenticeship and Industry Training**, apprentices must:

- have at least an Alberta Grade 9 education (or equivalent) or pass an entrance exam
- find a suitable employer who is willing to hire and train an apprentice. Most employers prefer to hire high school graduates and may select apprentices from among their current employees.

The **term of apprenticeship** is four years (four 12-month periods) that include a minimum of 1,420 hours of on-the-job training and six weeks of technical training in each of the first three years and a minimum of 1,600 hours of on-the-job training in the fourth. High school students can become apprentices and gain credits toward apprenticeship training and a high school diploma at the same time through the Registered Apprenticeship Program (RAP).

Applicants who have related training or work experience may be eligible for credit or certification.

Roofer apprentices may attempt the Interprovincial Exam in the final period of their apprenticeship training and, if successful, are granted a Red Seal (which is recognized in most parts of Canada).

Technical training is arranged by Alberta Apprenticeship and Industry Training and is currently offered at at the Northern Alberta Institute of Technology (NAIT) in Edmonton and by mobile delivery in Calgary.

Pre-employment programs for prospective apprentices and continuing education programs for journeymen may be offered on an as needed basis by the institution(s) listed above or other schools.

Employment and Advancement

Most roofers are employed by roofing contractors on construction or repair jobs. Some roofers are members of unions and work from union halls.

This occupation is less sensitive to economic changes than some construction trades because there is steady demand for repair work even if construction is slow. Roof systems require regular replacement every 15 to 20 years depending on the system used.

Roofers may advance to supervisory positions or become contractors themselves. Alberta certified journeyman roofers who have the supervisory or management skills required by industry may apply for an Achievement in Business Competencies Blue Seal by contacting Alberta Apprenticeship and Industry Training.

Roofers are part of the larger National Occupational Classification 7291: Roofers and Shinglers. In Alberta, most people employed in this classification work in the **Construction** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- time of year (see above)
- trends and **events** affecting overall employment (especially in the Construction industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 2,050 Albertans are employed in the Roofers and Shinglers occupational group which is expected to grow 1.9 to 2.9 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 30 to 60 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since roofers form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for roofers.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Apprentice roofers earn at least 65 per cent of the journeyman wage rate in their place of employment in the first year, 75 per cent in the second, 85 per cent in the third and 95 per cent in the fourth. According to the Alberta Provincial Apprenticeship Committee for this trade, journeyman wage rates vary, but generally range from **$17 to $24 an hour plus benefits** (2004 estimate).

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Roofers and Shinglers occupational group working part-time or full-time earned from **$21,500 to $103,500 a year.** The average salary was **$42,400 a year.**

Other Sources of Information

Alberta Apprenticeship and Industry Training website: www.tradesecrets.org

Alberta Construction Industry "Trade Up!" website: www.careersconstruction.com

Calgary Construction Association website: www.cca.cc

Construction Sector Council website: www.csc-ca.org

Related Occupational Profiles

Carpenter
Floorcovering Installer
Glazier
Insulator
Painter and Decorator

Related High School Subjects

Construction Technologies; and Physical Education

Related Post-Secondary Fields of Study

Trades, Industrial and Related Training

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Room/Housekeeping Attendant

Produced MARCH 2003

Room/housekeeping attendants keep hotels, motels, clubs and dormitory rooms and associated lobbies, halls and banquet rooms neat, clean and well stocked.

NOC Number(s): 6661
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus below average occupational growth in Alberta
Interests: **M O i**

Duties

Duties and responsibilities vary from one place of employment to another but, in general, housekeeping attendants:

- sweep and mop floors and/or vacuum carpets
- dust and polish furniture, and keeping it arranged properly
- vacuum draperies and upholstered furniture
- empty ashtrays and garbage containers
- sort, count, mark and fold linens
- make beds and/or change bedding
- scrub, disinfect and polish bathroom fixtures
- replace towels, soap and other supplies
- report damage, theft and articles found to the executive housekeeper or supervisor
- observe precautions required to protect hotel and guest property
- keeping storage areas and carts well stocked, clean and tidy.

In hotels and motels, housekeeping attendants may clean lobbies, halls and banquet rooms as well as guest rooms. They are generally responsible for:

- cleaning carpets and floors
- shampooing carpets and upholstered furniture
- hanging draperies
- changing light bulbs
- collecting soiled linens and garbage
- receiving and storing linens
- moving furniture.

In some establishments, housekeeping attendants are also responsible for setting up banquet and meeting rooms, and/or making minor repairs.

Working Conditions

Room/housekeeping attendants work shifts, including weekends and holidays. They are required to push/pull and lift items weighing up to 25 kilograms.

Personal Characteristics

Room/housekeeping attendants need the following characteristics:

- good health and stamina (to maintain a rigorous pace of manual work)
- conservatively groomed (their appearance reflects on the establishment)
- good communication skills
- the ability to work co-operatively with a variety of other employees.

They should enjoy having clear rules and guidelines for their work and using cleaning equipment.

Educational Requirements

(section revised OCTOBER 2005)

There are **no specific educational requirements** for room/housekeeping attendants. Training is generally on the job. Employers may require character references that indicate job applicants are honest and trustworthy.

The **Alberta Tourism Education Council (ATEC)** has developed a process for housekeeping room attendants to demonstrate their skills and write an examination to earn a certificate that is recognized throughout Canada in the tourism and hospitality industry.

Employment and Advancement

(section revised JANUARY 2006)

Room/housekeeping attendants are employed in hotels, motels, clubs and dormitories. Employment may be seasonal.

With experience, room/housekeeping attendants may move into other jobs in the tourism industry. Those who have supervisory skills and a high school diploma (or are willing to upgrade their education) may advance to executive housekeeper positions.

Room/housekeeping attendants are part of the larger National Occupational Classification 6661: Light Duty Cleaners. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Management, Administrative and Other Support Services**
- **Accommodation and Food Services**
- **Health Care and Social Assistance**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- time of year (for seasonal jobs)
- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 16,700 Albertans are employed in the Light Duty Cleaners occupational group which is expected to grow 0.5 to 1.5 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 80 to 260 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since room/housekeeping attendants form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for room/housekeeping attendants.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Light Duty Cleaners occupational group working part-time or full-time earned from **$10,500 to $53,300 a year.** The average salary was **$18,600 a year.**

Other Sources of Information

(section revised OCTOBER 2005)

Alberta Hotel and Lodging Association website: www.albertahotels.ab.ca

Alberta Tourism Education Council (ATEC) website: www.atec.ca

Related Occupational Profiles

Auto Detailer
Building Superintendent
Carpet and Upholstery Cleaner
Custodian
Domestic Housekeeper
Dry Cleaning and Laundry Workers
Executive Housekeeper
Guest Services Attendant

Related High School Subjects

Physical Education

Related Post-Secondary Fields of Study

Personal and Food Services

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Safety Codes Officer

Produced MAY 2003

Safety codes officers inspect the construction, installation and maintenance of structures and systems to ensure compliance with relevant codes, standards and regulations. They are concerned with the elements of public safety covered under the Safety Codes Act.

NOC Number(s): 2264
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **M I d**

Duties

Building safety codes officers inspect projects currently under construction for compliance with the Alberta Building Code. Their duties vary depending on their level of certification but, in general, they:

- examine blueprints and issue permits for proposed construction, relocation or demolition
- inspect buildings under construction to ensure compliance with building codes
- ensure that all problems identified by safety codes officers have been rectified before approving a building for occupancy

Electrical safety codes officers inspect a wide range of installations where electrical work is being done. In general, they ensure that electrical wiring and appliances, exterior wiring and industrial electrical equipment are installed safely and in accordance with electrical regulations.

Plumbing and gas safety codes officers ensure that private sewage systems, plumbing and gas appliances, fixtures, installations and equipment comply with applicable plumbing and gas regulations.

Boiler and pressure vessel safety codes officers:

- review and audit the implementation of authorized quality control programs
- ensure that boilers and pressure vessels are installed and operated safely in accordance with the boilers and pressure vessels regulations
- inspect power plants, pressure plants and steam plants
- review designs and conduct shop inspections and certification checks
- investigate accidents
- examine power engineers and pressure welders
- provide evidence required to prosecute violators.

Fire safety codes officers perform fire inspections and take measures to reduce danger to life and property, report fires and investigate the cause, origin and circumstances of fires within their jurisdiction.

Amusement rides, elevators and passenger ropeways (ski lifts) safety codes officers:

- conduct in-service inspections
- review plans and conduct initial inspections and regulatory audits
- conduct accident investigations
- issue permits.

Working Conditions

Safety codes officers work in a variety of settings including offices (reviewing plans and specifications, issuing permits), construction sites, fire or accident scenes, ski slopes and amusement fairs. Some overtime may be required when construction or recreation activities are at their height.

Safety codes officers must observe safety precautions such as wearing hard hats and safety shoes to avoid injury while working on construction sites.

Personal Characteristics

Safety codes officers need the following characteristics:

- good communication skills, in person and in writing
- good public relations skills to ensure that laws and regulations are properly enforced.

They should enjoy having clear rules and organized methods for their work, analyzing information and dealing with people.

Educational Requirements

Safety codes officers usually have a **combination of related training and work experience** such as journeyman certification or post-secondary education plus years of experience related to the type of inspection involved. For example, some boiler and pressure vessel safety codes officers must have a high school diploma and a First Class Power Engineering Certificate (for more information, see the Power Engineer occupational profile) or a university degree in mechanical engineering or equivalent, plus at least five years of experience in the design, fabrication, operation and maintenance or inspection of high pressure steam plants and equipment.

All safety codes officers must be certified by the Safety Codes Council. Different levels of certification require successful completion of approved courses.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

(section revised JANUARY 2006)

Safety codes officers are employed by municipal governments and accredited agencies and corporations that provide compliance monitoring services.

Experienced safety codes officers may advance to senior positions and, depending on their qualifications, to management positions.

Safety codes officers are part of the larger National Occupational Classification 2264: Construction Inspectors. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Construction**
- **Professional and Technical Services**
- **Public Administration**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 1,050 Albertans are employed in the Construction Inspectors occupational group which is expected to grow 2.0 to 3.0 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 20 to 40 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since safety codes officers form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for safety codes officers.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Salary ranges for safety codes officers vary depending on the employer and type of inspection involved.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Construction Inspectors occupational group working part-time or full-time earned from **$24,700 to $94,900 a year.** The average salary was **$60,300 a year.**

Other Sources of Information

Safety Codes Council website: www.safetycodes.ab.ca

Related Occupational Profiles

Carpenter
Electrician
Home Inspector
Occupational Health and Safety Inspector
Plumber
Power Engineer
Safety Officer
Steamfitter-Pipefitter

Related High School Subjects

Construction Technologies; Design Studies; Electro-Technologies; Fabrication Studies; Language Arts; Legal Studies; Management and Marketing; Mathematics; Science (Physics); and Social Studies

Related Post-Secondary Fields of Study

Engineering and Science Technologies; Engineering, Architecture and Related Studies; and Trades, Industrial and Related Training

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Safety Officer

Produced MARCH 2005

Safety officers facilitate the development, implementation and maintenance of workplace safety programs.

NOC Number(s): 2263
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **M I D**

Duties

Safety officers promote positive safety attitudes, and safe work practices and environments in their organizations. Their duties and responsibilities vary depending on where they work but, in general, they:

- evaluate work procedures and environments to identify potential hazards and ensure that adequate controls are in place
- advise managers and employees about safe work practices and safety standards and regulations
- recommend appropriate procedures and equipment for safety and compliance with relevant laws and regulations
- develop health and safety policies and programs, and instruct safety courses
- facilitate employee safety committees and programs
- promote safe work practices and injury/fatality prevention activities
- participate in accident investigations
- work with others on emergency planning.

These responsibilities may require that safety officers:

- inspect machines to identify potential hazards, recommend risk reduction measures and supervise the installation of safety features or the introduction of safer procedures
- regularly inspect premises for fire hazards and adequate fire protection, and inspect fire fighting equipment
- conduct noise level surveys
- study accidents to learn what caused them and develop procedures, methods or devices to prevent similar occurrences in the future
- identify harmful or hazardous dusts, vapours or gases, and advise management about corrective measures.

In trucking companies, safety officers inform truck and trailer drivers about traffic and safety regulations, loading and unloading policies, and proper care of equipment. They also investigate collisions and recommend measures to improve safety records and conserve equipment.

In mines, safety officers ensure compliance with health and safety laws and regulations. They check supports, electrical and mechanical equipment, explosives storage and air quality. They also instruct safety and first-aid courses and lead rescue activities.

In electrical utility companies, safety officers instruct workers about safety measures, check equipment and tools, observe crews at work, examine tunnels and ditches, investigate accidents and devise preventative measures.

In some organizations, safety officers have additional responsibilities related to workers compensation, environmental protection, risk management or plant security.

Working Conditions

Safety officers work in offices and at production sites. They usually work a standard 40 hour week but are sometimes required to work overtime.

Lifting up to 10 kilograms may be required.

Personal Characteristics

Safety officers need the following characteristics:

- excellent communication skills, both in person and in writing
- the ability to motivate workers and executives
- a willingness to do the reading required to keep up with new developments (e.g. in personal protection equipment, laws and regulations, research into links between worker illnesses and the materials to which they are exposed).

They should enjoy having clear rules and organized methods for their work, analyzing information, and dealing with people.

Educational Requirements

There are **no standard education or training requirements** for safety officers. However, employers generally prefer to hire people who have computer skills and a combination of relevant experience and education such as:

- journeyman certification or extensive work experience related to the employer's business (e.g. trucking, mining, electrical utilities)
- post-secondary education in occupational health and safety or a related field (e.g. chemistry, engineering, medicine, microbiology, physics).

Once hired, safety officers may obtain additional training on the job or take related continuing education courses offered by post-secondary institutions and professional associations. The following institutions offer full programs related to safety that are available to Albertans:

- The **University of Alberta** offers a 325 hour Occupational Health and Safety Certificate program through the Faculty of Extension in various locations: Edmonton, Red Deer (Red Deer College), Grande Prairie (Grande Prairie Regional College), Calgary and Fort McMurray (Keyano College). This program takes about three years to complete and is designed for practicing health and safety officers (and those aspiring to become officers). Applicants for the progam must be at least 21 years of age, have a high school diploma and have some experience in the work force.
- The **British Columbia Institute of Technology (BCIT)** in Burnaby, B.C. offers Occupational Health and Safety certificate and diploma programs. Students normally take two to five years to complete the certificate program which is available by distance education.
- **Ryerson University** in Toronto offers an Occupational Health and Safety distance education program. Ryerson also offers the only four year degree program in Canada with a specialization in Occupational Health and Safety.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Other Requirements

The Board of Canadian Registered Safety Professionals offers the designation Canadian Registered Safety Professional (CRSP) to applicants who have been employed as safety officers for at least three years and have successfully completed an evaluation, interview and examination process.

Employment and Advancement

(section revised JANUARY 2006)

In Alberta, safety professionals are employed primarily by large utitlity, manufacturing, resource (e.g. oil and gas, forestry) and transportation companies.

Opportunities for advancement to management positions are best for those who have post-secondary education.

Safety officers are part of the larger National Occupational Classification 2263: Inspectors in Public and Environmental Health and Occupational Health and Safety. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Public Administration**
- **Oil and Gas Extraction**
- **Professional and Technical Services**
- **Health Care and Social Assistance**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 2,100 Albertans are employed in the Inspectors in Public and Environmental Health and Occupational Health and Safety occupational group which is expected to grow 1.0 to 2.0 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 20 to 50 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since safety officers form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for safety officers.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Salaries for safety officers vary depending on the individual's qualifications and responsibilities.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Inspectors in Public and Environmental Health and Occupational Health and Safety occupational group working part-time or full-time earned from **$18,300 to $172,300 a year.** The average salary was **$62,500 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Board of Canadian Registered Safety Professionals (BCRSP) website: www.bcrsp.ca

Canadian Council for Human Resources in the Environment Industry (CCHRE) website's EnviroEmployment section: www.cchrei.ca/ee/

Construction Sector Council website: www.csc-ca.org

Related Occupational Profiles

Carpenter
Electrician
Heavy Equipment Technician
Occupational Health and Safety Inspector
Occupational Hygienist
Plumber
Power System Electrician
Safety Codes Officer
Underground Miner

Related High School Subjects

Community Health; Construction Technologies; Design Studies; Electro-Technologies; Energy and Mines; Forestry; Language Arts; Mathematics; Mechanics; and Science (Biology; Chemistry; and Physics)

Related Post-Secondary Fields of Study

Engineering and Science Technologies; Engineering, Architecture and Related Studies; Health Care and Medical Sciences; and Sciences

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Sales Representative (Wholesale, Nontechnical)

Produced OCTOBER 2003

Wholesale, nontechnical sales representatives sell their organizations' nontechnical goods and services to retail, commercial, industrial and professional clients.

NOC Number(s): 6411
Minimum Education: High school diploma
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **S M d**

Duties

Wholesale, nontechnical sales representatives are referred to more simply as sales representatives throughout this profile. Their duties and responsibilities vary depending on the types of goods and services they sell. For example, sales representatives may work for:

- **food and beverage producers** selling foodstuff to grocery stores and restaurants, and negotiate with retail merchants to improve product exposure (e.g. shelf position, advertising)
- **book publishers** promoting the sale of textbooks to educational institutions or magazines to newsstands, hotels, book stores and libraries
- **transportation companies** selling freight and shipping services to manufacturers, wholesalers and distributors.

However, in general, sales representatives:

- telephone or personally visit client organizations on a regular or periodic basis
- find out what client organizations need and emphasize how their product lines can meet those needs
- identify possible new clients by using resources such as business directories, following up leads from existing clients, meeting people through voluntary organizations and clubs, and attending trade shows and conferences
- approach potential new clients and present the benefits and uses of their product lines
- estimate or quote prices, credit terms, warranties and delivery dates and prepare sales proposals
- prepare sales contracts and reports, process orders and make delivery arrangements
- consult with clients to resolve any problems after a sale and provide ongoing support
- keep up to date with information about product innovations, competitors and market conditions and adjust their sales strategies accordingly
- prepare sales projection figures for the coming year.

Working Conditions

Sales representatives often work long and irregular hours. They may be required to carry bulky samples or product catalogues weighing up to 10 kilograms. They may also spend a considerable amount of time travelling.

Personal Characteristics

Sales representatives need the following characteristics:

- self-confidence and self-motivation
- the ability to persevere and remain cheerful when faced with rejection
- flexibility and adaptability
- the ability to communicate with all kinds of people and focus on their concerns
- the ability to work both independently and as part of a team.

They should enjoy selling goods or services, identifying and approaching potential customers and overseeing the preparation of sales contracts.

Educational Requirements

The minimum education requirement for sales representative positions is **a high school diploma**. However, many employers prefer to hire people who have a post-secondary diploma or degree related to the nature of the business, or related experience. Basic computer skills are a definite asset.

Many large organizations have some form of training program for newly hired sales representatives. They may train new employees by:

- rotating them through various positions to give them an understanding of the business and its products.
- offering in-house classroom training followed by on-the-job training under the supervision of a sales manager.
- having new employees accompany experienced sales representatives until they are familiar with the company's products and clients.
- sending new employees to sales courses offered by industry or professional associations.

Sales representatives must keep up to date with technological and other changes affecting their customers' companies.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

(section revised JANUARY 2006)

Sales representatives are employed by a wide variety of organizations, including:

- food and beverage producers
- manufacturers
- hotels
- petroleum companies
- business services firms
- transportation companies.

Advancement for experienced sales representatives may take the form of transfers to larger sales territories or ones with potentially greater sales opportunities. Successful sales representatives may stay in sales or advance to sales management positions. Or, they may move into marketing or become independent manufacturers agents who sell the products of more than one manufacturer.

In Alberta, over 75 per cent of people employed as sales representatives, (wholesale trade, non-technical) work in the following industries:

- **Wholesale Trade**
- **Professional and Technical Services**
- **Information, Culture and Recreation**
- **Food and Beverage Products Manufacturing**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 23,450 Albertans are employed in the Sales Representatives, (Wholesale Trade, Non-Technical) occupational group which is expected to grow 1.3 to 2.3 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 300 to 540 **new** positions will be created each year **in addition** to job openings created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Sales representatives' earnings vary greatly and are often directly related to their job performance. Most employers offer a combination of salary plus commission, or salary plus bonus. A commission is a percentage of the price of each article or service sold. Incomes from bonuses may depend on individual performance (as commissions do), the performance of all sales workers in a particular group or the company's performance overall.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Sales Representatives - Wholesale Trade (Non-Technical) occupational group working part-time or full-time earned from **$12,000 to $195,300 a year.** The average salary was **$47,800 a year.**

Other Sources of Information

Canadian Professional Sales Association website: www.cpsa.com

Related Occupational Profiles

Advertising Account Executive
Auctioneer
Call Centre Agent
Cosmetician
Retail Salesperson
Technical Sales Representative

Related High School Subjects

Financial Management; Information Processing; Language Arts; Management and Marketing; Physical Education; and Social Studies

Related Post-Secondary Fields of Study

Business, Management and Administrative Studies; and Personal and Food Services

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Sawfiler

Apprenticeship and Industry Training

Produced FEBRUARY 2006

Sawfilers repair, set and sharpen blades for band, chain, hand, circular and other types of saws.

NOC Number(s): 7383.5
Minimum Education: Apprenticeship Trade - Grade 10
Employment Outlook: Employment turnover plus below average occupational growth in Alberta
Interests: **O M i**

Duties

Sawfilers keep lumber and wood products processing plants operating smoothly by ensuring the overall maintenance of sawmill blades and knives (e.g. chipper knives). Circular sawfilers deal with all types of saws except band saws.

Duties vary from one position to another but, in general, sawfilers:

- sharpen saws
- shape saw teeth for different cutting purposes
- straighten bent saws
- adjust circular and band saw tension.

They may use hand tools, filing machines, welding equipment, lasers, computers and other sophisticated electronic equipment.

Sawfiles may also work with millwrights and other personnel to align equipment.

Working Conditions

Sawfilers may be required to live and work in remote areas where sawmills are located. They usually work in a saw room or shop. The work is noisy and involves some heavy lifting. Sawfilers work a 40 hour-week with overtime and shift work when required.

Sawfilers may be required to lift items weighing over 25 kilograms.

Personal Characteristics

Sawfilers need the following characteristics:

- good manual dexterity and hand-eye co-ordination
- good reading, writing and math skills
- mechanical aptitude
- physical strength and stamina
- the ability to keep up to date with changing technology
- dedication to producing a quality product
- patience.

They should enjoy doing precision work that requires some creativity.

Educational Requirements

To work in Alberta, sawfilers must be ONE of the following:

- registered apprentices
- certified journeymen
- working for an employer who is satisfied that they have the skills and knowledge expected of certified journeymen
- self-employed.

To **register** with **Alberta Apprenticeship and Industry Training**, apprentices must:

- have at least an Alberta Grade 10 education with Math 10 or 13, Pure Math 10 or Applied Math 10 and English 10 or 13 (or equivalent) or pass an entrance exam
- find a suitable employer who is willing to hire and train an apprentice. Most employers prefer to hire high school graduates and may select apprentices from among their current employees. Computer skills and programming knowledge are definite assets.

The **term of apprenticeship** for:

- **sawfilers** is four years (four 12-month periods) that include a minimum of 1,680 hours of on-the-job training and four weeks of technical training each year.
- **circular sawfilers** is three years (three 12-month periods) that include a minimum of 1,680 hours of on-the-job training and four weeks of technical training each year.

Applicants who have related training or work experience may be eligible for credit or certification.

Technical training is arranged by Alberta Apprenticeship and Industry Training and is currently offered at at the British Columbia Institute of Technology (BCIT) in Burnaby. On-the-job training is offered in Alberta while the technical training is held in British Columbia.

Pre-employment programs for prospective apprentices and continuing education programs for journeymen may be offered on an as needed basis by the institution(s) listed above or other schools.

Employment and Advancement

Sawfilers are employed in the lumber and wood products industries, usually in sawmills and pulp mills. Some employers require their employees to be union members.

There are limited opportunities for sawfilers to advance to supervisory positions. Alberta certified journeyman sawfilers who have the supervisory or management skills required by industry may apply for an Achievement in Business Competencies Blue Seal by contacting Alberta Apprenticeship and Industry Training.

Sawfilers are part of the larger National Occupational Classification 7383: Other Trades and Related Occupations. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Management, Administrative and Other Support Services**
- **Wood Products Manufacturing**
- **Repair, Maintenance, Personal and Other Services**
- **Agriculture**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- time of year (for seasonal jobs)
- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

About 1,100 Albertans are employed in the Other Trades and Related Occupations group, which is expected to grow 0.3 to 1.3 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover. (**Note**: Since sawfilers form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for sawfilers.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Apprentice **sawfilers** earn at least 50 per cent of the journeyman wage rate in their place of employment in the first year, 60 per cent in the second, 70 per cent in the third and 85 per cent in the fourth.

Apprentice **circular sawfilers** earn at least 50 per cent of the journeyman wage rate in their place of employment in the first year, 60 per cent in the second and 70 per cent in the third.

According to the Alberta Provincial Apprenticeship Committee for this trade, journeyman wage rates for the branches vary, but generally range from **$14 to $22 an hour plus benefits** (2005 estimate).

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Other Trades and Related Occupations group working part-time or full-time earned from **$19,100 to $51,500 a year.** The average salary was **$36,000 a year.**

Other Sources of Information

Alberta Apprenticeship and Industry Training website: www.tradesecrets.org

Related Occupational Profiles

Machinist
Sawmill Machine Operator

Related High School Subjects

Fabrication Studies; Forestry; Language Arts; Mathematics; and Physical Education

Related Post-Secondary Fields of Study

Trades, Industrial and Related Training

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Sawmill Machine Operator

Produced DECEMBER 2005

Sawmill machine operators operate, monitor and control automated machines and equipment that process logs into lumber, shingles and shakes.

NOC Number(s): 9431
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus below average occupational growth in Alberta
Interests: O M I

Duties

Sawing logs into boards and planks of varying widths and thicknesses requires a fairly standard series of operations but the processes used vary from one sawmill to another. In some sawmills, the work of sawmill machine operators is labour intensive. In other mills, technological advances have decreased the amount of manual labour required.

Sawmill machine operators may use various types of automated equipment to:

- move logs from storage yards onto transfer decks
- convey logs through laser scanners that determine the most profitable cutting patterns for each log
- send logs through cut-off saws that cut logs to optimum lengths
- debark logs
- feed logs through various types of saws, edgers and trimmers to produce rough lumber
- sort and stack lumber according to length, width and thickness
- move stacks of lumber to storage yards and, later, to and from drying kilns
- feed rough lumber through planers to give it a smooth (dressed) surface
- wrap or strap lumber into packages and label packages for shipment.

In general, sawmill machine operators:

- use front end loaders, stationary deck cranes or gantry cranes to feed logs into the sawmill
- operate equipment from consoles or control rooms to scan logs for size and quality; convey logs and lumber to and from saws; saw logs into rough lumber; saw, trim, sort, stack, put in dry kiln and plane rough lumber into dressed lumber of various sizes and saw or split shingles and shakes
- monitor logs and lumber movement to ensure cuts satisfy customer requirements
- clean and maintain equipment
- attend regularly scheduled safety meetings.

Working Conditions

Sawmill machine operators work shifts that depend on production requirements. The working environment may be hot/cold, noisy or dusty, although technical advancements are improving these conditions.

Safety equipment such as hard hats, safety boots, safety glasses, gloves, high visibility vests and ear protection are required to reduce the risk of injury. Depending on the mill, machine operators may be required to lift items weighing over 25 kilograms.

Personal Characteristics

Sawmill machine operators need the following characteristics:

- the ability to lift heavy items often
- good spatial perception
- manual dexterity
- the ability to perform repetitious tasks and remain alert to avoid accidents
- the ability to work as part of a team.

They should enjoy operating and monitoring equipment, having clear parameters and organized methods for their work, and working with others to solve problems.

Educational Requirements

Employers generally prefer to hire high school graduates but may hire people who have less education if they have experience operating machinery or equipment.

Sawmill machine operators are trained on the job. They usually start in entry level labouring positions. After a number of years, employees may be offered machine operating positions as they become available. With experience and satisfactory performance operating one type of machine, they advance to more complex tasks.

Employment and Advancement

(section revised JANUARY 2006)

Sawmill machine operators are employed in sawmills and planing mills. In some sawmills, union membership is a condition of employment.

Machine operators may move into electrician or millwright apprenticeship positions (for more information, see the Electrician and Millwright occupational profiles). Advancement to head sawyer or planer operator positions requires years of experience in various sawmill machine operating positions with the same company. Without further education such as Advanced First Aid, Lumber Grading and power engineering certification (see the Power Engineer profile), advancement opportunities are limited. Post-secondary education is a definite asset for advancement to leadership positions such as planer supervisor or sawmill supervisor.

In Alberta, people employed as sawmill machine operators work in the **Wood Products Manufacturing** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Other Manufacturing industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 1,350 Albertans are employed in the Sawmill Machine Operators occupational group which is expected to grow up to 0.5 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover.

The employment turnover rate in many sawmills is low so jobs may not be available often. Hoever, turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Wages and benefits vary considerably from one employer to another.

According to the **2005 Alberta Wage and Salary Survey**, Albertans with three years of experience working part-time or full-time in the Sawmill Machine Operators occupational group earned up **to $58,100 a year.** The average salary was **$48,500 a year.**

Other Sources of Information

Alberta Forest Products Association (AFPA) website: www.albertaforestproducts.ca

Related Occupational Profiles

Pulpmill Operator
Sawfiler

Related High School Subjects

Electro-Technologies; Forestry; Language Arts; Mathematics; Mechanics; and Physical Education

Related Post-Secondary Fields of Study

Trades, Industrial and Related Training

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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School Business Official

Produced DECEMBER 2003

School business officials provide financial and business services to publicly funded school boards.

NOC Number(s): 0313.2
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **D M s**

Duties

School business officials are leaders and administrators. They may specialize in a particular area or work in several areas of public education administration:

- financial management (e.g. prepare annual budgets and financial statements, provide financial management advice, develop and recommend financial strategies, conduct internal audits, prepare grant applications)
- corporate management (e.g. initiate and participate in operational planning and policy development, develop and manage information management systems, oversee the implementation of legislated requirements such as freedom of information and protection of privacy requirements, evaluate plan and policy effectiveness)
- personnel and labour relations (e.g. negotiate labour contracts, motivate staff and provide leadership, facilitate staff development, ensure compliance with labour standards, provide payroll and other human resource services)
- property management (e.g. manage building and renovation projects, oversee building maintenance, negotiate joint use agreements, manage energy conservation programs)
- student transportation (e.g. developing school bus routes, supervising day-to-day operations, purchasing vehicles and supplies, negotiating agreements, ensuring student safety)
- public relations and communications (e.g. develop and maintain positive media relations, prepare annual reports, facilitate internal and external communication).

Duties and responsibilities therefore vary considerably from one position to another and from one school district to another.

Working Conditions

School business officials usually work standard weekday hours in school board or district offices. Senior officials must attend evening school board and public meetings, and overtime is often required to meet budget and other deadlines. Depending on the position, some travel may be required.

Personal Characteristics

School business officials need the following characteristics:

- excellent oral and written communication skills
- critical thinking, logical analysis and problem solving skills
- initiative
- the ability to work alone and as part of a team
- high ethical standards.

They should enjoy directing and supervising the work of others, having clear rules and organized methods to guide their activities, and negotiating with other administrators.

Educational Requirements

School business officials need a combination of related post-secondary education and experience. For example, those in financial management positions may require an accounting designation. Most school business officials have a bachelor's or master's degree in a related discipline.

Universities and colleges throughout the province offer three and four year degree programs in business, commerce and management. In general, the entrance requirement for such programs is completion of one or two years of applicable university study, or a high school diploma with an average of 65 to 80 per cent, as specified by each institution, in English 30 and four other appropriate Grade 12 subjects (specific course requirements vary from program to program).

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Other Requirements

(section revised OCTOBER 2004)

Certified School Business Official is a protected title under Alberta's Professional and Occupational Associations Registration Act. This means that to call yourself a Certified School Business Official, you must be a registered member of the Association of School Business Officials of Alberta (ASBOA). You do **not** have to be registered if you do not call yourself a Certified School Business Official.

Employment and Advancement

(section revised JANUARY 2006)

School business officials are employed by school authorities. They often start in junior positions and, with experience, may advance to senior positions.

School business officials are part of the larger National Occupational Classification 0313: School Principals and Administrators of Elementary and Secondary Education. In Alberta, most people employed in this classification work in the **Educational Services** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Educational Services industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 3,400 Albertans are employed in the School Principals and Administrators of Elementary and Secondary Education occupational group which is expected to grow 1.4 to 2.4 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 40 to 90 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since student populations are declining and no new school jurisdictions created in the foreseeable future, very few new positions will be for school business officials.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised SEPTEMBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the School Principals and Administrators of Elementary and Secondary Education occupational group working part-time or full-time earned from **$17,300 to $156,600 a year.** The average salary was **$83,000 a year.**

Other Sources of Information

Association of School Business Officials of Alberta website: www.asboa.ab.ca

Related Occupational Profiles

Accountant
Health Service Administrator
Human Resources Professional
Internal Auditor
Management Consultant
Municipal Administrator
Public Relations Representative
Purchasing Agent
Systems Auditor

Related High School Subjects

Enterprise and Innovation; Financial Management; Information Processing; Language Arts; Languages (other than English); Management and Marketing; Mathematics; Science; and Social Studies

Related Post-Secondary Fields of Study

Business, Management and Administrative Studies; Communications; Computer and Information Technology; Education and Library Studies; and Social Sciences, Law and Religious Studies

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For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Sculptor

Produced JUNE 2005

Sculptors create original three-dimensional artworks in a wide variety of traditional media (e.g. wood, clay, metal, stone) and nontraditional media (e.g. sound and virtual reality).

NOC Number(s): 5136.2
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **I O m**

Duties

The boundaries between categories in the visual arts are much less distinct today than they once were. Traditionally, sculptors have used materials such as stone, bronze, concrete, wood, clay and plaster. Today, many sculptors use materials and methods normally associated with other disciplines. For example, they may work in, and experiment with, photography, metals of all kinds, fired ceramics, electricity, video and digital media, sound, wax, ice, plastics, performance art, fibre, textiles and other materials. They may produce only one or a limited number of copies of each piece of work.

Sculptures range in size from a small coin to several hundred acres of "live art." There are many new and emerging areas as sculptors experiment with new materials, installation techniques and mixed media applications. In some cases, sculptors employ the assistance of engineers, mechanics and other technical experts.

Many sculptors are continually studying and learning different techniques and experimenting with different materials. They keep up to date with what is going on in the art world by reading and attending exhibitions at art galleries.

Working Conditions

Sculptors' working conditions vary with their media. They may use a variety of hand tools and power tools. Some materials and tools require attention to safety practices to prevent injury.

Studios may be clean and well ventilated, or they may have less than ideal working conditions. Flying particles, falling objects, fumes, heat and chemicals are common occupational hazards. Sculptors may work at home, wherever large pieces are situated or in studios located in artist-run centres or warehouses.

The work can be physically demanding. Lifting requirements vary depending on the medium.

Personal Characteristics

Sculptors need the following characteristics:

- self-discipline and determination
- self-promotion and marketing skills
- artistic talent and creativity
- the ability to translate their ideas into finished products and critique their own work
- the ability to communicate their ideas on paper (to prepare proposals)
- the ability to deal with criticism.

They should enjoy working independently.

Educational Requirements

There are **no formal education requirements** for sculptors. However, they need:

- some knowledge of art history, composition and contemporary art criticism
- a portfolio of good quality slides of their best work
- training in the safe use of materials, tools and equipment

- small business skills (marketing and financial management skills in particular).

Prospective sculptors should look for education programs that have the best blend of technical and creative course materials for their particular interests and needs.

In Alberta, fine art programs are offered by the following post-secondary institutions:

- **Alberta College of Art and Design** in Calgary
- **Grande Prairie Regional College**
- **Grant MacEwan College** in Edmonton
- **Keyano College** in Fort McMurray
- **Medicine Hat College**
- **Mount Royal College** in Calgary
- **Red Deer College**
- **University of Alberta** in Edmonton and Camrose
- **University of Calgary**
- **University of Lethbridge**.

Admission requirements vary from one institution to another but generally include a high school diploma with English Language Arts 30-1 (or English 30) and four other appropriate Grade 12 subjects. Some institutions specify a minimum acceptable average (ranging from 60 to 80 per cent) and submission of a portfolio of previous work. For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Continuing education programs are often offered on an as needed basis.

The **Banff Centre for the Arts** offers winter and summer programs for experienced sculptors. A portfolio and a statement of learning objectives are required.

Employment and Advancement

(section revised JANUARY 2006)

Sculptors may receive commissions or fees paid in advance that allow them to buy materials and cover some living expenses while they finish a site-specific or major work. However, few sculptors can support themselves on their art work alone. Many work in other fields or do related work such as mass production design or mould making to cover their living costs and studio rent.

Sculptures may be commissioned by special request or sold in retail markets or through agents. Sculptors may display their art in:

- galleries and museums
- restaurants and clubs
- office buildings and public spaces
- parks, exhibit grounds and international expositions.

They also may market their work electronically through television or the Internet. Sometimes, film makers rent available ready-made sculptures.

Emerging sculptors can get a start by entering art competitions, art festivals or arranging their own shows in their homes or artist-run centres. Before approaching gallery owners, sculptors should do some research to identify galleries that have a style compatible with their own. Sculptors usually have one gallery representative per city.

The **Alberta Foundation for the Arts** and the **Canada Council** purchase artworks and offer grants for promising sculptors to enable them to study and work for a few months or a year at a time.

Sculptors are part of the larger National Occupational Classification 5136: Painters, Sculptors and Other Visual Artists. In Alberta, most people employed in this classification work in the **Information, Culture and Recreation Services** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Information, Culture and Recreation industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

About 2,350 Albertans are employed in the Painters, Sculptors and Other Visual Artists occupational group which is expected to grow 1.0 to 2.0 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 20 to 50 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since sculptors form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for sculptors.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Most sculptors work in other occupations to support themselves. Some sculptors receive commissions or fees paid in advance that allow them to buy materials and cover some living expenses while they finish site-specific or major works.

Sculpture prices vary considerably depending on the sculptor's reputation, size of the piece, materials used and availability of the sculptor's work. Most galleries deduct a commission ranging from 40 to 75 per cent.

A few well-established sculptors hire agents to handle marketing, bookkeeping and sales transactions.

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Sculptors Society of Canada (SSC) website: www.cansculpt.org

Related Occupational Profiles

Conservator
Craftsperson
Industrial Designer
Painter/Printmaker
Set Designer

Related High School Subjects

Communication Technology; Fabrication Studies; Fashion Studies; Financial Management; Fine Arts (Dance; and Visual Arts); Information Processing; Language Arts; Management and Marketing; Mathematics; Physical Education; and Science (Physics)

Related Post-Secondary Fields of Study

Fine Arts and Performing Arts

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Secondary School Teacher

Produced JANUARY 2006

Secondary school teachers may be generalists or subject area specialists who provide instruction to young people in junior and senior high school (Grades 7 to 12).

NOC Number(s): 4141
Minimum Education: 4 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **S I D**

Duties

In general, secondary school teachers:

- identify student's individual and collective learning needs
- plan and deliver instruction based on student learning needs and special needs
- provide a stimulating learning environment in which each student can experience growth and develop to his or her potential
- help students learn appropriate knowledge, skills and attitudes.

Secondary classes vary in size and are made up of students who represent a broad range of abilities, interests, needs and problems. Teachers use various instructional techniques to maintain student interest and maximize individual learning within a group teaching environment.

In addition to preparing and presenting lessons, secondary school teachers:

- evaluate and communicate student progress
- prepare and implement remedial programs for students requiring extra help
- meet with other professionals to discuss individual student needs and progress
- volunteer to supervise extra-curricular and after-school activities
- attend meetings, seminars and in-service training sessions.

Most of these additional duties occur after regular school hours and add considerable length to the working day. Some teaching specializations may concentrate on preparation and organization, while others may involve more marking or extra-curricular involvement.

Secondary teachers in large urban schools often teach many classes in only one or two subject areas. In smaller rural schools and schools with a generalist approach, secondary teachers are required to teach a broader range of subjects and grades.

Academic specialists teach core courses such as English language arts and math. They prepare and present academic course content in a clear and creative way by using techniques and materials designed to motivate students. Their duties also may include:

- laboratory preparation and the maintenance of laboratory materials
- working with individuals or small groups of students who require additional help.

In addition to second languages taught as specific subjects, many schools offer language immersion programs at various levels. Bilingual and multilingual teachers may teach academic subjects in languages other than English.

English as a second language (ESL) teachers work with immigrant children whose English skills are insufficient for the regular classroom. The objective of an ESL program is to integrate students into mainstream classes by:

- providing students with the necessary English vocabulary
- assisting students with communication skills and strategies
- helping students adjust to Canadian society.

Fine arts teachers are usually artists and performers in their own fields. For more information, see the Dancer, Instrumental Musician, Painter/Printmaker, Singer and Sculptor occupational profiles.

Career and technology studies teachers are usually specialists in their fields. For more information, see the Career and Technology Studies Teacher occupational profile.

Physical Education teachers work toward producing a desirable level of physical fitness and motor skill development in their students through recreational activities such as:

- indoor and outdoor games
- individual, dual and team sport activities
- rhythmics and dance
- tumbling and gymnastics
- aquatics.

Working Conditions

Secondary teachers spend most of their working day instructing classes. They may teach 150 or more students a day. The work can be demanding, requiring a great deal of physical, mental and emotional energy. Many hours are spent out of class working with individual students and preparing lessons and marking assignments.

Most secondary schools are well-equipped, attractive facilities with up-to-date audio-visual, language laboratory, computer and scientific equipment.

Personal Characteristics

Secondary school teachers need the following characteristics:

- a genuine interest in and respect for young people
- enthusiasm for their subject areas
- the ability to be creative, imaginative, patient, energetic and resourceful
- good mental, emotional and physical health
- tolerance and an appreciation of diverse cultures
- the ability to establish rapport and enjoy contact with the public, especially parents
- strong leadership qualities and a good sense of humor
- a clear, pleasant speaking voice
- excellent written and verbal communication and presentation skills.

They should enjoy finding different ways to solve questions and present information, and organizing and co-ordinating the work of others.

Educational Requirements

In Alberta, the minimum qualification required to teach in a secondary school is four years of post-secondary education leading to a **Bachelor of Education (B.Ed.) degree**. The following post-secondary institutions offer B.Ed. degree programs.

- **Canadian University College** in College Heights offers a four year B.Ed. program with a specialization in secondary education. The admission requirement is a high school diploma or equivalent with an average of at least 60 per cent in English Language Arts 30-1 (or English 30), Pure Math 30 and two other 30 level courses, preferably laboratory sciences.
- **Red Deer College** offers a four year B.Ed. degree program with a specialization in middle school (Grades 4 to 9) in collaboration with the University of Alberta. The admission requirement is successful completion of the first two years of the B.Ed. elementary program or completion of an approved degree program. Admission to this program is limited to the 40 applicants who have the highest grade point average.
- The **University of Alberta** in Edmonton offers B.Ed. degree, joint degree and after-degree programs through the Faculty of Education and the Faculte Saint-Jean. The admission requirement for the Faculty of Education is one year of pre-professional studies (usually in Arts, Science, Human Ecology or Physical Education) including 24 units of transferable course weight to the student's B.Ed. major. Admission to pre-professional studies programs generally requires a competitive average in English Language Arts 30-1 (or English 30), three 30 level humanities or science subjects, and one other approved 30 level subject. The admission requirement for the Faculte Saint-Jean program is the same except that 30 level French is specifically required.
- The **University of Calgary** offers B.Ed. after-degree and combined degree programs in secondary education. Students take three years in General Studies, Fine Arts, Kinesiology or Science, then transfer to Education for the remaining two years of a five year combined degree program. The admission requirement for General Studies is a high school diploma or equivalent with a competitive average in English Language Arts 30-1 (or

English 30), Pure or Applied Math 30 (or Math 31), and three of the following: Biology 30, Chemistry 30, Physics 30, Social Studies 30, Science 30, or one five-credit Grade 12 subject (French 30, 30S or 30N recommended).

- The **University of Lethbridge** offers combined degree and after-degree B.Ed. programs. The admission requirement for the after-degree program is a GPA of at least 2.5/4 in a bachelor's degree program with a major in a school subject. Students are admitted to the Faculty of Education after two or three years of university studies. Admission requirements for combined degree programs depend on the combined degree desired. The basic entrance requirement is an average of at least 65 per cent in English Language Arts 30-1 (or English 30), three 30 level subjects (math or science courses may be required or recommended) and a fifth Grade 12 subject.

Secondary education students in B.Ed. programs must choose at least two subject areas of concentration.

The University of Calgary and the University of Lethbridge have an established quota for their program and the University of Alberta has an enrollment management program where applicants compete for entrance into the Faculty based on their major field of study and grade point average. The number of successful applicants and entrance requirements may vary from year to year. Competition for admission is keen and universities give preference to those who have had previous experience working with children in a leadership capacity. Valuable experience can be obtained from:

- playground supervision
- day care work
- hospital volunteering
- amateur sports coaching
- teacher assistant work
- working with youth in organized groups.

Post-secondary institutions throughout the province offer university transfer programs that allow students to apply up to two years of study toward university bachelor's degree programs. It is the student's responsibility to ensure that the courses they choose to take will be accepted for credit at the institution to which they wish to transfer.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Other Requirements

Under Alberta's School Act and Certification of Teachers Regulation, elementary and secondary school teachers must be certified by Alberta Education.

Employment and Advancement

Secondary teachers are employed in:

- public and separate schools
- private schools
- hospitals
- vocational schools and colleges.

With experience and further education, secondary school teachers may advance to positions such as:

- department head
- co-ordinator of a particular subject area in a large school or school system
- specialists in departments of education, universities or school districts
- school administration (vice-principal, assistant principal, principal).

In Alberta, people employed as secondary school teachers work in the **Educational Services** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Educational Services industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

In large urban centres, the supply of secondary school teachers is generally greater than the demand. To find employment, beginning teachers may:

- relocate to smaller, rural or northern communities

- work as supply (substitute) teachers.

Over 16,750 Albertans are employed in the Secondary School Teachers occupational group which is expected to grow 1.3 to 2.3 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 210 to 390 **new** positions will be created each year **in addition** to job openings created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Since teachers' salaries and benefits are determined by negotiated agreements between school boards and their teachers, salaries vary from one board to another. However, all teachers are paid according to a grid system based on their number of years of university training and number of years of teaching experience.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Secondary School Teachers occupational group working part-time or full-time earned from **$23,400 to $100,600 a year.** The average salary was **$64,700 a year.**

All teachers employed in Alberta's publicly supported schools are members of the Alberta Teachers' Association (A.T.A.) and are automatically included under the Alberta Teachers' Pension Plans Act. Collective agreements negotiated by the A.T.A. on behalf of Alberta's teachers provide a range of benefits, including:

- life and disability insurance
- extended health care coverage
- vision and dental insurance
- professional improvement leave opportunities.

Holidays and pensions are specified by provincial legislation. However, many teachers use the summer break period of July and August, Christmas and spring break holidays for professional development or for fulfilling additional professional responsibilities.

Other Sources of Information

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Teachers' Association (ATA) website: www.teachers.ab.ca

Related Occupational Profiles

Career and Technology Studies Teacher
College, Technical or Vocational Instructor
Elementary School Teacher
English as a Second Language Teacher - Adults
Private Trainer/Facilitator
Special Needs Teacher

Related High School Subjects

Communication Technology; Information Processing; Language Arts; Languages (other than English); Mathematics; Physical Education; Science (Biology; Chemistry; and Physics); and Social Studies

Related Post-Secondary Fields of Study

Education and Library Studies

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Security Alarm Installer

Produced DECEMBER 2003

Security alarm installers install and maintain electronic security alarm systems for homes, businesses and industrial properties.

NOC Number(s): 2242
Minimum Education: High school diploma
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **O I M**

Duties

In general, security alarm installers:

- check the installation site, read the work order and check drawings to determine locations for specified equipment
- lay out wiring routes and cut openings in walls, floors and frames using hand and power tools
- mount raceways or conduits, pull wires through and splice them
- install motion sensors and other types of intruder and alarm devices
- program security systems by using computers and special software (on site or by telephone)
- test systems using equipment such as multimeters
- demonstrate systems for customers and explain the cause and seriousness of false alarms
- trouble-shoot malfunctions and make the necessary adjustments or repairs
- prepare documents such as invoices, warranties and installation and repair records.

Working Conditions

Security alarm installers work in environments that vary from clean, comfortable homes and businesses to cold, dusty buildings under construction. Some travel from job-site to job-site is required.

A standard 40-hour work week is the norm, although occasional overtime may be required during busy periods. For customer convenience, security alarm installers may work some evenings and weekends.

Safety precautions are required to avoid injuries when working with power tools and electricity, and hard hats and steel-toed boots are required on construction sites. Lifting up to 10 kilograms may be required.

Personal Characteristics

Security alarm installers need the following characteristics:

- good motor co-ordination and manual dexterity
- normal colour vision
- mechanical aptitude and good spatial perception
- good communication and interpersonal skills for dealing with customers and other workers
- the ability to present a positive and professional image of their company.

They should enjoy using tools and equipment to perform tasks requiring precision, trouble-shooting problems and working with little direction or supervision.

Educational Requirements

In Alberta, security alarm installers are **trained on the job.** Employers generally prefer to hire job applicants who have a high school diploma, a background in electronics or building construction, and a valid driver's licence. Some computer knowledge is an asset. A security clearance check is generally required.

High schools, colleges, private vocational schools and technical institutes throughout the province offer courses in electronics. When there is sufficient demand and funding available, the **Canadian Alarm and Security Association (CANASA)** offers Alarm Technician Levels I and II courses in various locations across Canada. Applicants must be bondable (acceptable to bonding companies as responsible, law-abiding people), and have a high school diploma with *English, mathematics and physics courses (or equivalent qualifications).*

The **British Columbia Institute of Technology (BCIT)** in Burnaby offers a 28-week Security Alarm Installer certificate program. Admission to the program requires a high school diploma (or equivalent) with at least a C in Math 11 (Math 20 in Alberta), or a passing grade on an entrance test which assesses math and reading skills. A security clearance may be required prior to final acceptance into the program.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Security alarm installers must be willing to study on an ongoing basis to keep up to date with new developments in electronics.

Other Requirements

In some provinces, certification is required to work in this occupation. Some municipalities (e.g. the city of Calgary) require security alarm installers to be licensed.

Employment and Advancement

(section revised JANUARY 2006)

Security alarm installers are employed by security alarm companies which range in size from local operations to national chains. A growing number of installers work on a contract basis.

Experienced security alarm installers may advance to lead installer and supervisor positions. They may also set up their own businesses or move into other jobs in the company such as sales or customer service positions.

Security alarm installers are part of the larger National Occupational Classification 2242: Electronic Service Technicians (Household and Business Equipment). In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Professional and Technical Services**
- **Management, Administrative and Other Support Services**
- **Repair, Maintenance, Personal and Other Services**
- **Retail Trade**
- **Wholesale Trade**
- **Educational Services**
- **Construction**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 10,650 Albertans are employed in the Electronic Service Technicians (Household and Business Equipment) occupational group which is expected to grow 1.9 to 2.9 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 200 to 310 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since security alarm installers form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for security alarm installers.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Electronic Service Technicians (Household and Business Equipment) occupational group working part-time or full-time earned from **$14,200 to $81,100 a year.** The average salary was **$44,200 a year.**

Other Sources of Information

Post-secondary institution calendar and website (see Educational Requirements above)

Canadian Alarm and Security Association website: www.canasa.org

Construction Sector Council website: www.csc-ca.org

Related Occupational Profiles

Automobile Accessories Installer
Electrician
Locksmith

Related High School Subjects

Construction Technologies; Design Studies; Electro-Technologies; Language Arts; Mathematics; Physical Education; and Science (Physics)

Related Post-Secondary Fields of Study

Trades, Industrial and Related Training

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Security Guard

Produced APRIL 2003

Security guards protect an organization's property, personnel and information against fire, theft, vandalism and illegal entry.

NOC Number(s): 6651
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **M s d**

Duties

Specific duties vary depending on the area of employment. For example, security guards may work at shopping centres, banks, sports facilities, airports, conventions, parking lots, construction sites or in public buildings such as hospitals, museums and art galleries. In general, security guards:

- patrol an assigned area
- check doors, windows, locks and building interiors for signs of damage or theft
- provide information, guide traffic or respond to complaints and maintain order
- watch for intruders, sometimes through the use of electronic surveillance systems
- observe and keep records of security-related activities.

In case of fire or the presence of unauthorized persons, the security guard sounds an alarm or telephones the supervisor, fire department or police. In some situations, security guards may make arrests.

The following types of security work involve being outside and driving.

- In **patrol car service,** a security guard, alone or accompanied by a dog or another guard, patrols construction sites, buildings, property, etc. as a daily or nightly routine.
- In **mobile patrol,** security guards respond to alarms from businesses, residences and schools. If an actual break and enter is detected, they contact police.
- In **camp or construction site guard service,** security guards patrol and do gate clearance work at large construction sites or plants. This work may be seasonal, with more opportunities for employment during the summer months.

Inspectors visit work sites to ensure that security employees are performing their duties.

Working Conditions

Security guards may:

- work indoors or outdoors in all weather conditions.
- stand most of the time or sit at work stations monitoring electronic security systems.
- work in teams or work alone for extended periods of time.
- work in uniform or plain clothes.

Most security guards work shifts that include weekends and holidays. Many work evening and night shifts. Guards who work during the day often must deal with the public.

Security guards may be required to routinely lift items weighing up to 10 kilograms.

Personal Characteristics

This type of work appeals to people who enjoy having clear rules and guidelines for their work, dealing with people from diverse backgrounds and controlling access to facilities.

Educational Requirements

(section revised DECEMBER 2005)

Most employers prefer to hire people who have at least high school education. Some security agencies have no minimum education requirements; however, they do require applicants to:

- speak and write English
- be 18 years of age or older
- have good character references and no police record
- be in good health.

Some companies require that guards have valid first aid and CPR certificates, a valid driver's license and their own mode of transportation.

Most security guards are trained on the job. However, having some related training prior to employment is a definite asset, particularly for later advancement. Being able to communicate in a second language is also an asset.

The **Canadian Society for Industrial Security** offers three non-progressive levels of certification for security guards:

- Certified Security Officer
- Certified Security Supervisor
- Certified Security Professional

In Alberta, the following post-secondary institutions offer security-related programs.

- **Columbia College**, a private vocational school in Calgary, offers Criminal Justice Certificate and Diploma programs. These programs may be taken as 25-week full-time programs or 50-week part-time programs. The entrance requirements for the Certificate program include a high school diploma with at least 60 per cent in English 30 and Math 30 or equivalent, a successful interview and a criminal record check.
- **Grant MacEwan College** in Edmonton offers a two year Police and Security diploma program with a specialization in Investigations and Security Management. The entrance requirement is a high school diploma or equivalent with at least 65 per cent in English 30 (or at least 75 per cent in English 33 or a skills assessment). A criminal record check and fitness test are required.
- **Hilltop Security Academy**, a private vocational school in Calgary and Edmonton, offers a 12-week Private Security Professional program. Applicants must have adequate oral and written communication skills, a clear ciminal records check and 33 credits toward an high school diploma (Grade 10) with English 10 or Math 10 or equivalent.
- **Lethbridge Community College** offers a one year Risk Management Certificate program. The entrance requirement is a high school diploma or equivalent. Applicants are required to take a computerized placement test, complete a questionnaire and attend an interview with a faculty member. A medical examination and eyesight/colour vision testing are recommended.
- **Medicine Hat College** offers a two year Police and Security diploma program. The entrance requirements include a high school diploma with at least 60 per cent in English 30 or equivalent, and completion of a Standard First Aid and CPR certificate. An interview and program orientation are required and a physical fitness test may be required. This program is offered in partnership with Grant MacEwan College.
- **NorQuest College** in Edmonton offers a 40-week Aboriginal Policing and Security certificate program. Applicants must be at least 19 years old and have successfully completed a Grade 10 English and Math or equivalent. A valid driver's licence, fitness assessment and medical exam are also required.
- **Northern Lakes College** in Grouard offers a 10-month Aboriginal and Community Policing certificate program. Applicants must be at least 19 years old and have successfully completed English 23 and Math 13 or Applied Math 10 or equivalent. A valid driver's licence, criminal record check, fitness assessment, medical exam and personal interview are also required. Graduates of this program may apply for credit toward police and security programs at Lethbridge Community College, Grant MacEwan College or Athabasca University.
- The **University of Alberta** Faculty of Extension offers an eight course Security Management program. The entrance requirement is a high school diploma or equivalent.
- The **University of Calgary** Faculty of Continuing Education offers a 300 hour Security Management program. Applicants must have a high school diploma, be over 23 years of age and have suitable business experience.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Prospective students should consult employers regarding program suitability and reputation before enrolling in a post-secondary education program. For information about related degree programs, see the Police Officer occupational profile.

Other Requirements

Under the Private Investigators and Security Guards Act, security guards who work on a contract basis must be licensed by the Alberta Solicitor General. Fingerprints are checked with municipal police departments or the Royal Canadian Mounted Police.

Employment and Advancement

(section revised JANUARY 2006)

Security guards are employed by:

- private guard service companies
- governments
- retailers
- construction companies
- industrial plants
- hospitals
- other public and private building owners

Experienced security guards may advance to supervisor, manager or inspector positions.

Security guards are part of the larger National Occupational Classification 6651: Security Guards and Related Occupations. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Management, Administrative and Other Support Services**
- **Public Administration**
- **Information, Culture and Recreation**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 10,750 Albertans are employed in the Security Guards and Related Occupations group which is expected to grow 1.8 to 2.8 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 190 to 310 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since security guards form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for security guards.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Employment propects are best for those who have their own transportation and are willing to work night shifts.

Salary

(section revised OCTOBER 2005)

Salaries for security guards vary widely depending on the responsibilities of the position and the type of employer.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Security Guards and Related Occupations group working part-time or full-time earned from **$10,900 to $32,700 a year.** The average salary was **$19,600 a year.**

Other Sources of Information

EDinfo website: www.alis.gov.ab.ca/edinfo

Canadian Society for Industrial Security website: www.csis-scsi.org

Related Occupational Profiles

Bylaw Enforcement Officer
Customs Inspector
Police Officer
Private Investigator

Related High School Subjects

Community Health; Language Arts; Languages (other than English); Legal Studies; Mathematics; and Physical Education

Related Post-Secondary Fields of Study

Social, Community and Protective Services

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Seed Cleaning/Conditioning Plant Manager

Produced MARCH 2005

Seed cleaning/conditioning plant managers operate plants that remove weed seed, foreign material and other contaminants from seed, and may upgrade seed to improve the quality of the product.

NOC Number(s): 8252
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus below average occupational growth in Alberta
Interests: **O M i**

Duties

In general, seed cleaning plant managers:

- unload grain from growers' vehicles
- weigh the grain and record the type and amount
- discuss the services to be provided with producers
- operate cleaning (conditioning) equipment, bin grain and load trucks or supervise staff who perform these functions
- identify weed seed and supervise purity control
- arrange for outside seed testing (e.g. germination)
- maintain equipment and arrange for repairs as needed
- clean the plant
- maintain financial and operational records.

In plants that retail seed, seed treatments and other goods, managers also have sales and customer service duties or supervise others who perform these functions.

Working Conditions

Working conditions around seed plants can be dusty and noisy, but technological improvements have reduced this problem. Safety precautions must be observed to avoid injury when operating machinery and equipment.

Some of the work involves manual labour but the amount of lifting required varies with the type of facility. At plants that bag seed, plant managers may be required to lift bags weighing up to 25 kilograms. Minimal lifting is required at plants that do not bag seed.

Personal Characteristics

Seed cleaning plant managers need the following characteristics:

- initiative and self-discipline
- good organizational skills
- excellent communication skills
- the ability to work well with others
- good problem solving and decision-making skills
- mechanical skills
- the ability to pay close attention to details.

They should enjoy using machinery and equipment, taking a methodical approach to co-ordinating and maintaining records, and negotiating with farmers and farm managers.

Educational Requirements

Seed cleaning plant managers must be knowledgeable about:

- crop types and grades
- the Canada Seeds Act and related regulations
- weed seeds
- seed-treating chemicals.

Since they are responsible for operating a business with very few employees, they also need a working knowledge of:

- how to set up and adjust seed cleaning equipment
- bookkeeping
- relevant computer applications
- public relations
- labour and safety laws and regulations
- mechanics (for maintaining and cleaning equipment).

There are **no formal educational requirements** for working in a seed cleaning plant. However, employers may prefer to hire job applicants who have related post-secondary education.

In Alberta, the following colleges offer related post-secondary programs:

- **Lakeland College** in Vermilion
- **Lethbridge Community College**
- **Olds College**.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Other Requirements

Seed cleaning plant managers who dispense pesticides must be licensed by Alberta Environment. Those who clean pedigree seed must be certified by the Canadian Seed Institute.

Employment and Advancement

(section revised JANUARY 2006)

Seed cleaning plant managers usually start as operators in seed cleaning plants. With on-the-job experience, they may be promoted to managing operator or manager.

Experienced seed cleaning plant managers may become grain elevator managers or representatives for agribusiness companies (e.g. chemical or seed sales representatives).

Seed cleaning plant managers are part of the larger National Occupational Classification 8252: Agricultural and Related Service Contractors and Managers. In Alberta, over 75 per cent of people employed in this classification work in the **Agriculture** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Agriculture industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

About 400 Albertans are employed in the Agricultural and Related Service Contractors and Managers occupational group which is expected to grow up to 0.5 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover. (**Note**: Since seed cleaning plant managers form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for seed cleaning plant managers.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Seed cleaning/conditioning plant managers earn from **$40,000 to $70,000 per year (2005 estimate).**

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Agricultural and Related Service Contractors and Managers occupational group working part-time or full-time earned an average salary of **$47,100 a year**.

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Seed Industry Partnership website: www.seed.ab.ca

Canadian Seed Institute website: www.csi-ics.com

Related Occupational Profiles

Agrologist
Grain and Forage Crop Producer

Related High School Subjects

Agriculture; Electro-Technologies; Financial Management; Language Arts; Management and Marketing; Mathematics; Mechanics; Physical Education; and Science (Biology; and Chemistry)

Related Post-Secondary Fields of Study

Agriculture and Related Technologies

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Seismic Observer

Produced SEPTEMBER 2005

Seismic observers operate geophysical recording instruments used in seismic field tests and perform routine maintenance to ensure optimum data quality.

NOC Number(s): 2212.2
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **O M i**

Duties

Before oil companies decide to drill a well in a new location, they usually require information from seismic tests to analyze the underground rock formation and its potential for holding reserves of oil or gas. A great deal of time and money is spent on seismic operations and major decisions are made on the basis of seismic data.

The size of a seismic crew varies with the nature of the job but the crew usually consists of a large team of specialists (for more information, see the Seismic Workers occupational profile).

In general, seismic observers:

- operate, maintain and are responsible for the expensive electronic equipment used to record seismic signals
- perform daily and monthly instrument tests, and ensure all equipment meets tolerance specifications
- troubleshoot problems and repair recording equipment
- document recording operations
- ensure the quality of recorded data at the field level
- supervise the work of line truck drivers and as many as thirty helpers as they prepare areas for seismic tests.

During seismic tests, observers work in a recording truck and use two-way radios to direct the work of crew members involved in the tests. In some cases, observers activate the explosives used in tests or direct the work of shooters who activate explosives from a different location.

Senior observers may be responsible for supervising overall seismic operations in the absence of the party manager.

Working Conditions

Seismic crew members should be able to lift items weighing up to 25 kilograms. They do a lot of travelling and often spend extended periods of time away from home, living and working in close contact with a limited number of people.

Personal Characteristics

Seismic observers need the following characteristics:

- the ability to work effectively in a team
- good organizational skills
- an interest in working outdoors (in some cases, in isolated locations).

They should enjoy working with instruments and equipment at tasks requiring precision, compiling data and assisting in technical functions.

Educational Requirements

Many companies provide on-the-job training and safety training for seismic crew members. Employers generally prefer to hire applicants who have previous experience on a seismic crew or experience with:

- farm equipment
- mechanical devices

- heavy equipment
- electronic equipment.

To advance to senior positions such as seismic observer, training in a related **engineering technology or mechanics** is a definite asset. For information about related post-secondary education programs, see the Geological and Geophysical Technologist, Electronics Engineering Technologist, Petroleum Engineering Technologist, and Mechanical Engineering Technologist occupational profiles.

Employment and Advancement

(section revised JANUARY 2006)

Seismic observers are employed by:

- geophysical companies
- oil companies
- independent data processing companies.

Companies specializing in seismic work and oil companies involved in seismic work are listed in the Yellow Pages of the telephone directory under Geophysical Services.

Individuals on seismic crews usually start as helpers. After gaining experience, they may advance to other positions: vibrator operator, shooter, observer, surveyor or driller. Eventually, they may advance to party manager, responsible for co-ordinating the activities of the seismic crew. Party managers:

- organize the seismic operation, crew and equipment
- make the necessary arrangements to prepare locations
- supervise the activity of seismic crews
- ensure that safe work procedures are followed
- handle any major problems that may arise
- keep field supervisors informed about the progress of seismic operations.

Seismic observers are part of the larger National Occupational Classification 2212: Geological and Mineral Technologists and Technicians. In Alberta, over 75 per cent of people employed in this classsification work in the following industries:

- **Oil and Gas Extraction**
- **Professional and Technical Services**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

About 3,600 Albertans are employed in the Geological and Mineral Technologists and Technicians occupational group which is expected to grow 1.6 to 2.6 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 50 to 100 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since seismic observers form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for seismic observers.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Geological and Mineral Technologists and Technicians occupational group working part-time or full-time earned from **$21,300 to $117,000 a year.** The average salary was **$56,700 a year.**

Other Sources of Information

Canadian Association of Geophysical Contractors (CAGC) website: www.cagc.ca

Small Explorers and Producers Association of Canada (SEPAC) website: www.sepac.ca

Related Occupational Profiles

Drilling and Service Rig Managers
Electronics Engineering Technologist
Geological and Geophysical Technologist
Petroleum Engineering Technologist
Seismic Worker

Related High School Subjects

Electro-Technologies; Energy and Mines; Information Processing; Language Arts; Mathematics; Mechanics; Physical Education; Science (Chemistry; and Physics); and Wildlife

Related Post-Secondary Fields of Study

Engineering and Science Technologies; Engineering, Architecture and Related Studies; and Sciences

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Seismic Worker

Produced SEPTEMBER 2005

Seismic workers conduct seismic tests in which controlled explosions or vibrations create sound waves in the earth's surface and geophysical instruments record seismic data.

NOC Number(s): 8615
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: **M O i**

Duties

Before oil companies decide to drill a well in a new location, they usually require information from seismic tests to analyze the underground rock formation and its potential for holding reserves of oil or gas. A great deal of time and money is spent on seismic operations and major decisions are made on the basis of seismic data.

The size of a seismic crew varies with the nature of the job but the crew usually consists of a large team of specialists.

Seismic drillers drill bore holes for the explosive charges that create underground shocks for seismic tests. In general, seismic drillers and their helpers:

- transport the equipment required for a drilling operation
- keep continual logs of drilling activity
- load holes with explosives.

Shooters organize the shooting equipment used to set off explosions, and control the shoot and the blasting zone. In general, shooters and their helpers:

- drive and maintain the trucks that contain shooting equipment
- load holes with explosives (when not already loaded by drillers)
- direct helpers and others in laying electrical cables and connecting explosive charges
- monitor equipment during the test
- ensure that safety precautions are followed
- maintain an accurate inventory of explosives
- report any irregularities in shooting procedures and shot point conditions to the seismic observer.

During seismic tests, shooters are in constant contact with observers (for more information, see the Seismic Observer occupational profile). Explosives may be set off from controls in the shooting truck or the recording truck.

Vibrator operators operate vibrating units that are sometimes used instead of explosives to create energy waves in the ground. The vibrator unit is mounted on a medium-sized truck buggy or tracked vehicle that has a large plate attached underneath. When the plate is dropped or vibrated, it creates energy waves in the ground that reflect back to the surface. Often, up to four vibrating units are operated at one time.

In general, vibrator operators:

- organize the placement of equipment
- operate and maintain vibrator equipment
- handle and adjust controls to position the vibrating plate
- co-ordinate activities with seismic observers
- sometimes drive fuel trucks.

Senior vibrator operators may supervise the work of the vibrator crew or repair equipment as required.

Helpers are inexperienced people in training positions on seismic crews. After they gain skills and experience, helpers may move to other positions on a crew.

- Recording helpers, often called jug hustlers, assist seismic observers. In preparation for recording activities, observers may require as many as twenty or more helpers to haul cables, geophones and other recording equipment, and place and connect recording equipment.

- Shooter helpers work under the direction of shooters. In general, they:
  - carry and place explosives (under the direct supervision of a licensed blaster)
  - tamp charges
  - guard the area during shooting activities
  - assist shooters in overall operations.

Three-dimensional seismic work and heliportable operations require more equipment and much larger crews including staging managers, line crew bosses and trouble-shooters.

Staging managers (sometimes called staging equipment co-ordinators):

- keep inventories of the equipment being used
- set up and organize staging sites
- organize the deployment of personnel and equipment during heliportable operations.

Line crew bosses (sometimes called line truck drivers):

- supervise line crew personnel
- drive and maintain the trucks used to transport personnel and equipment to and from field operations
- co-ordinate crew members boarding and exiting helicopters
- arrange the safe and orderly transport of equipment
- place signage along roadways when necessary.

Trouble shooters work directly under observers and deal with equipment failures. With 3-D seismic work so much equipment is used that several trouble shooters are required to maintain them.

Working Conditions

Seismic workers may be required to:

- lift items weighing up to 25 kilograms
- walk long distances through varied terrain
- work outdoors in all types of weather conditions
- travel in small aircraft or helicopters
- spend extended periods of time away from home, living and working in close contact with a number of people.

Personal Characteristics

Seismic workers need the following characteristics:

- the ability to adapt to a number of different environments (mountains, plains)
- the ability to work effectively in a team
- an interest in working outdoors (sometimes in isolated locations).

They should enjoy having clear rules and guidelines for their work, and operating and maintaining equipment.

Educational Requirements

Seismic workers must have a valid driver's licence. There are **no formal, minimum education requirements** for the position of helper on a seismic crew. However, a high school education and an interest in mathematics, physics and geology are definite assets. Employers generally prefer to hire job applicants who have experience with:

- farm equipment
- mechanical devices
- heavy equipment
- electronic equipment.

Employers provide on-the-job training and safety training.

To advance to more senior positions on a seismic crew, work experience or post-secondary training in an engineering technology, electronics or mechanics is a definite asset. For information about related post-secondary education programs, see the Geological and Geophysical Technologist, Petroleum Engineering Technologist, Electronics Engineering Technologist and Mechanical Engineering Technologist occupational profiles.

Employment and Advancement

(section revised JANUARY 2006)

Seismic workers are employed by:

- geophysical companies
- oil companies
- independent data processing companies.

Companies specializing in seismic work and oil companies involved in seismic work are listed in the Yellow Pages telephone directory under Geophysical Services.

Seismic crew members usually start as helpers. After gaining experience, they may advance to line boss or trouble-shooter positions, then to shooter or vibrator operator positions, before moving up to staging co-ordinator and junior observer positions. Experienced seismic crew members who prefer indoor positions may move into positions in data processing centres that process seismic data.

Seismic workers are part of the larger National Occupational Classification 8615: Oil and Gas Drilling, Servicing and Related Labourers. In Alberta, most people employed in this classification work in the **Oil and Gas Extraction** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Oil and Gas Extraction industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

About 7,950 Albertans are employed in the Oil and Gas Drilling, Servicing and Related Labourers occupational group which is expected to grow 3.0 to 4.0 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 230 to 320 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since seismic workers form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for seismic workers.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Oil and Gas Drilling, Servicing and Related Labourers occupational group working part-time or full-time earned from **$16,400 to $120,500 a year.** The average salary was **$47,000 a year.**

Other Sources of Information

Canadian Association of Geophysical Contractors (CAGC) website: www.cagc.ca

Small Explorers and Producers Association of Canada (SEPAC) website: www.sepac.ca

Related Occupational Profiles

Seismic Observer

Related High School Subjects

Electro-Technologies; Energy and Mines; Language Arts; Mathematics; Mechanics; Physical Education; and Science (Chemistry; and Physics)

Related Post-Secondary Fields of Study

Driver Training; and Engineering and Science Technologies

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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OCC info Alberta Occupational Profiles

Alberta Human Resources and Employment

Service Rig Personnel

Produced JULY 2005

Oil and gas well service rig personnel perform general labourer duties on service rigs and operate specialized equipment to service, complete and abandon wells.

NOC Number(s): 8412.1
Minimum Education: Less than high school
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: **O M d**

Duties

Service rig personnel include floorhands, derrickhands and service rig operators. In general, their work involves:

- lowering and raising equipment to pull up broken tubing, casing and pump rods
- lowering and raising testing instruments or special servicing tools such as fishing tools or paraffin scraping devices.

Floorhands spend a lot of time working on the rig floor. There often are two floorhands on a service rig crew. In general, floorhands:

- operate the elevator and tongs
- assist other members of the service crew as needed
- clean and maintain equipment
- perform housekeeping duties (keep the lease area tidy, scrub or paint around the rig).

Derrickhands work high above the rig floor on a platform called a monkeyboard or use a harness and platform climbing device to get to the proper position on the derrick to:

- guide lengths of pipe, instruments and tools as they are being raised from or lowered into the hole
- steady items while they are being connected and disconnected.

When they are not up in the derrick, derrickhands:

- listen to pumps that circulate workover fluid and check them regularly for vibration or other problems
- maintain and repair mud tanks and related equipment
- prepare mud reports and instruct the crew handling chemical additives
- inspect the derrick before it is raised or lowered
- assist operators (see below)
- help train new and junior crew members.

Service rig operators ensure that crews do their jobs safely and efficiently. They report directly to service rig managers and are responsible for the crew when the rig manager is not present. In general, service rig operators:

- operate hoisting equipment control panels
- monitor the progress of operations
- keep records
- train crew members
- introduce new procedures that may help the crew to work more safely and effectively.

Working Conditions

Working conditions vary depending on rig locations and weather conditions. Service rig personnel work outdoors, often year round in remote locations, exposed to extremes in weather as well as to the dirt, dust, noise and fumes common around rigs.

Hours of work and the number of crews involved depend on well site location and the types of service required. Service rig crews usually work 12 hour day shifts that include commuting time to and from work. Occasionally, rig locations are remote enough that crews operate out of a camp or stay at a nearby hotel, and work rotating 12 hour shifts to keep the rig running 24 hours a day.

The work is physically demanding and may involve lifting items that weigh over 25 kilograms. Workplace hazards include working on wet, slippery rig floors, working near or with heavy tools and moving machinery, and exposure to chemical substances such as paint, motor oil and drilling mixture substances. Service rig crew members must follow standard safety practices and participate in safety meetings and emergency procedure drills.

Personal Characteristics

Service rig personnel need the following characteristics:

- physical strength, stamina and agility
- emotional stamina
- an interest in working outdoors and in remote areas
- the ability to work quickly, think ahead to the next procedure and respond appropriately in emergency situations
- the ability to get along well with co-workers.

They should enjoy having clear rules and guidelines for their work, working with equipment and machinery, and working in a team environment.

Educational Requirements

Service rig personnel acquire the skills and knowledge they need by learning on the job and taking courses.

Employers require applicants to be at least 18 years of age, have a driver's license and have some high school education. High school graduation is not required for employment as a floorhand but may be an asset for further advancement.

Enform (formerly Petroleum Industry Training Service and Canadian Petroleum Safety Council) in Calgary and Nisku (near Edmonton) offers courses for service rig crew members and pre-employment courses for people who want to gain a better understanding of the work environment before working in the industry.

Employers generally provide a safety orientation program and may provide technical classroom instruction for interested employees. New crew members are required to have first aid and H2S Alive certification (hydrogen sulphide training). Employers also may require crew members to take Fall Arrest, Waste Hazardous Material Information System (WHMIS) or additional driver training. Some service rig personnel need a Special Oil Well Operator Certificate for working with boilers.

Employment and Advancement

(section revised JANUARY 2006)

Service rig personnel are employed by oil and gas well service contractors. Some service rigs operate year round but employment is often seasonal.

The most important requirements for advancement are on-the-job training, experience and the ability to learn new things quickly. Floorhands may advance to derrickhand and service rig operator positions, or they may move into well service equipment operator positions. A conscientious, hard working individual who has good leadership skills can advance to a rig manager position.

Not everyone is capable of becoming a good derrickhand. Individuals who do not feel comfortable working in high places do not usually move into this position. However, those wishing to advance to senior positions must have a good understanding of the derrickhand's duties.

Service rig personnel are part of the larger National Occupational Classification 8412: Oil and Gas Well Drilling Workers and Services Operators. In Alberta, most people employed in this classification work in the **Oil and Gas Extraction** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Oil and Gas Extraction industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation**.

Over 10,350 Albertans are employed in the Oil and Gas Well Drilling Workers and Services Operators occupational group which is expected to grow 2.5 to 3.5 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 250 to 370 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since service rig personnel form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for service rig personnel.)

Salary

(section revised OCTOBER 2005)

In October 2005, the Canadian Association of Oilwell Drilling Contractors (CAODC) published the following base wage **recommendations**:

- $22.40 an hour for floorhands
- $24.80 an hour for derrickhands
- $28.20 an hour for operators
- $12 an hour for travel time.

When they are working away from home, service rig crew members are paid an additional living or subsistence allowance of $45 or $55 a day depending on the location of the rig.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Oil and Gas Well Drilling Workers and Services Operators occupational group working part-time or full-time earned from **$24,800 to $257,000 a year.** The average salary was **$60,100 a year.**

Other Sources of Information

Canadian Association of Oilwell Drilling Contractors (CAODC) website: www.caodc.ca

Petroleum Human Resources Council of Canada (PHRCC) website: www.petrohrsc.ca

Enform (formerly Petroleum Industry Training Service and Canadian Petroleum Safety Council) website: www.enform.ca

Small Explorers and Producers Association of Canada (SEPAC) website: www.sepac.ca

Related Occupational Profiles

Drilling and Service Rig Managers
Drilling Rig Leasehand/Floorhand
Oil and Gas Well Loggers and Testers
Rig Technician
Well Service Equipment Operator

Related High School Subjects

Community Health; Electro-Technologies; Energy and Mines; Mechanics; and Physical Education

*Related Post-Secondary Fields of Study

Trades, Industrial and Related Training

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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OCC*info* Alberta Occupational Profiles

Alberta Human Resources and Employment

Set Designer

Produced FEBRUARY 2004

Set designers design and plan the creation of settings, scenic environments and properties (props) for theatre, dance, opera, television, video and film productions.

NOC Number(s): 5243.1
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **I M D**

Duties

Duties and responsibilities vary from one type of production to another but, in general, set designers:

- read and analyze the script and consult with the director and others to develop design concepts
- research architectural styles and building interiors appropriate to the time period depicted
- research stylistic elements such as paintings and art objects
- propose concepts that may include the use of metaphorical, psychological or mythological approaches
- share their research and concepts with other designers
- develop detailed working drawings, sketches (colour renderings) and/or three-dimensional models to communicate design ideas and requirements
- work within budget, labour and space restrictions
- select materials and supervise the construction and painting of sets and props
- attend rehearsals and oversee the integration of set design with performance.

Most set designers are required to supervise the construction and painting of sets and, in small theatres, to help with these activities as well.

Working Conditions

Set designers often work long hours to meet deadlines. Most work on a freelance basis and work out of their homes or studios during the creation phase of a production. Later, they may work indoors or outdoors to supervise set construction.

Personal Characteristics

Set designers need the following characteristics:

- creativity and artistic vision
- flexibility
- the communication and interpersonal skills required to work effectively with others and market their ideas or services.

They should enjoy synthesizing information, experimenting and finding innovative solutions to problems, doing precise work with tools and equipment, and supervising the work of others.

Educational Requirements

Set designers must be able to interpret scripts and written texts into visual images, and convert those images into functional set designs. This requires:

- a working knowledge of artistic principles (e.g. colour and composition), theatre history, art history, architecture and historical interiors
- an understanding of the principles of interior design and construction
- a sense of architectural style
- drawing, painting and modelling skills

- the ability to draft working drawings and produce renderings.

Training in the following is essential: drafting, computer aided drafting and design, freehand drawing, painting and model making.

This is a very specialized field: a bachelor's degree or master's degree in fine art with a specialization in set design, or training at a specialized conservatory such as the National Theatre School of Canada is recommended.

In Alberta, many post-secondary institutions offer performance arts programs (for more information, see the Actor, Dancer and Instrumental Musician occupational profiles), some offer programs specifically related to broadcasting or film production (see the Film Director occupational profile) and some offer interior design programs (see the Interior Designer occupational profile). The following institutions offer fine art programs in technical production:

- During the summer months, the **Banff Centre for the Arts** offers Theatre Production and Design programs for people who already have related training and experience. The Centre also offers Theatre Production Residencies in electrics, properties, scenic construction and scenic painting. Applicants must submit a resume, and a statement of learning objectives.
- **Grant MacEwan College** in Edmonton offers a two year Theatre Production diploma program. The entrance requirement is a high school diploma with English 30 (or at least 75 per cent in English 33).
- **Mount Royal College** in Calgary offers a two year Theatre Arts diploma program with a technical stream. The entrance requirement is a high school diploma, and an audition or interview.
- **Red Deer College** offers a two year Theatre Studies diploma program with a specialization in technical production. The entrance requirement is a high school diploma with English 30.
- The **University of Alberta** in Edmonton offers a four year Bachelor of Fine Art degree program in theatre design. The entrance requirement is an average of 65 to 80 per cent in English 30 and four of the following: Biology 30, Chemistry 30, Pure Math 30, Math 31, Physics 30, Social Studies 30, Science 30, 30-level languages other than English, one fine arts subject. A portfolio, assigned design project and three letters of reference are also required. The University of Alberta also offers a Master of Fine Arts degree program in theatre design.
- The **University of Lethbridge** offers a four year BFA degree program in drama with a design/technical major. The entrance requirement is an average of at least 60 per cent in English 30, three other appropriate 30 level subjects and a fifth Grade 12 subject.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

(section revised JANUARY 2006)

Set designers work for:

- theatre companies
- film and television production companies
- opera and dance companies
- festivals.

Some theatre companies employ resident designers but most set designers work as freelancers and negotiate contracts for specific projects. Therefore, aspiring set designers need to acquire related experience and develop a portfolio of their work. Working for amateur theatre companies or cable television stations provides valuable experience.

Graduates of design programs usually start as designers for smaller productions or as assistant set designers in larger ones. Advancement generally takes the form of more demanding assignments. Some set designers teach at universities and colleges.

Set designers are part of the much larger National Occupational Classification 5243: Theatre, Fashion, Exhibit and Other Creative Designers. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Professional and Technical Services**
- **Information, Culture and Recreation**
- **Retail Trade**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting funding for the arts
- **location** in Alberta

- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 600 Albertans are employed in the Theatre, Fashion, Exhibit and Other Creative Designers occupational group which is expected to grow 1.2 to 2.2 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover. (**Note**: Since set designers form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for set designers.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Most set designers work on a contract basis. Their incomes therefore vary considerably from one designer to another and from one year to another.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Theatre, Fashion, Exhibit and Other Creative Designers occupational group working part-time or full-time earned from **$13,100 to $106,500 a year.** The average salary was **$28,900 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Associated Designers of Canada (ADC) website: www.designers.ca

Related Occupational Profiles

Costume Designer
Craftsperson
Exhibit Designer
Lighting Designer
Painter/Printmaker
Sculptor
Stage Manager

Related High School Subjects

Communication Technology; Construction Technologies; Design Studies; Fine Arts (Drama; and Visual Arts); Information Processing; Language Arts; Languages (other than English); Management and Marketing; Mathematics; Science; and Social Studies

Related Post-Secondary Fields of Study

Communications; Fine Arts and Performing Arts; and Human Ecology, Fashion and Food Sciences

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For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Sheet Metal Worker

Apprenticeship and Industry Training

Produced FEBRUARY 2006

Sheet metal workers design, fabricate, assemble, install and repair sheet metal products.

NOC Number(s): 7261
Minimum Education: Apprenticeship Trade
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **O M I**

Duties

Sheet metal workers use many types of metal including black and galvanized steel, copper, brass, nickel, stainless steel, aluminum and tin plate to make products such as:

- pollution control systems, dust collection and control systems, air-slides, grain spouts, material blowers, air-veyors and other air systems
- heating, ventilating and air conditioning systems
- solar heating and cooling systems
- metal showcases, display neon and metal signs
- metal cabinets, custom built tables, counters and fixtures for hospitals, kitchen equipment and items for the food service and beverage industry
- electrical panels and related equipment
- dairy, brewery and laboratory equipment
- metal shelving, lockers, window frames, metal doors and frames, toilet partitions
- flashing, coping, troughing and roof drainage systems
- custom or small fabrication runs of sheet metal items.

On occasion, sheet metal workers substitute fibreglass or plastic for metals.

Duties vary from one position to another but, in general, sheet metal workers:

- lay out, measure and mark dimensions and reference lines on sheet metal according to drawings or templates
- use laser or plasma cutting equipment, numerically-controlled or computerized equipment, hand and power shears and snips and light metal-working equipment to cut, drill or punch, bend and shape sheet metal
- fasten components together with bolts, screws, cement, rivets, adhesives or solder or by welding
- install and repair sheet metal products and ensure installations conform to specifications and building codes
- do metal cladding of insulated piping and equipment on industrial sites
- make and install flashing, coping for roofing applications
- supply, install, service and repair air handling equipment, furnaces, fans and air terminal devices.

Sheet metal workers may work from verbal instructions or blueprints, or design small jobs themselves.

Working Conditions

Sheet metal workers make some products in a shop before and install them at construction sites. Other products such as roofing and siding have to be measured and cut at the construction site. Shops may be noisy and outdoor work must be done in all types of weather. Considerable bending, reaching, working at heights or in cramped spaces may be required. A 40-hour work week is normal, but overtime may be required to meet construction deadlines.

Sheet metal workers may be required to lift items weighing over 25 kilograms.

Personal Characteristics

Sheet metal workers need the following characteristics:

- mechanical aptitude

- good eyesight and hand-eye coordination
- spatial and form perception
- manual dexterity
- the ability to visualize a finished product from a drawing
- physical strength and stamina
- the abilility to work in awkward and noisy places
- patience, dependability and accuracy.

They should enjoy taking a methodical approach to ensure products conform to specifications while still maintaining a high degree of accuracy.

Educational Requirements

To work in Alberta, sheet metal workers must be registered apprentices or certified journeymen.

To **register** with **Alberta Apprenticeship and Industry Training**, apprentices must:

- have Alberta Math 20 or 23, Pure Math 20 or Applied Math 20 (or equivalent) or pass an entrance exam
- find a suitable employer who is willing to hire and train an apprentice. Most employers prefer to hire high school graduates and may select apprentices from among their current employees. Sheet metal workers need a good background in practical math, geometry and blueprint reading.

The **term of apprenticeship** is four years (four 12-month periods) that include a minimum of 1,425 hours of on-the-job training and ten weeks of technical training each year. High school students can become apprentices and gain credits toward apprenticeship training and a high school diploma at the same time through the Registered Apprenticeship Program (RAP).

Applicants who have related training or work experience may be eligible for credit or certification.

Sheet metal worker apprentices may attempt the Interprovincial Exam in the final period of their apprenticeship training and, if successful, are granted a Red Seal (which is recognized in most parts of Canada).

Technical training is arranged by Alberta Apprenticeship and Industry Training and is currently offered at:

- the Northern Alberta Institute of Technology (NAIT) in Edmonton
- the Southern Alberta Institute of Technology (SAIT) in Calgary.

Pre-employment programs for prospective apprentices and continuing education programs for journeymen may be offered on an as needed basis by the institution(s) listed above or other schools.

Employment and Advancement

Most sheet metal workers are employed by sheet metal, air conditioning and heating contractors involved in residential, commercial and industrial construction. A few are self-employed or work in shops with related trades. Some are employed by roofing contractors to install flashing and coping.

Experienced sheet metal workers may become specialists in design and layout work or in estimating the cost of installations. They may advance to supervisory positions, or go into business for themselves. Alberta certified journeyman sheet metal workers who have the supervisory or management skills required by industry may apply for an Achievement in Business Competencies Blue Seal by contacting Alberta Apprenticeship and Industry Training.

In Alberta, over 75 per cent of people employed as sheet metal workers work in the **Construction** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Construction industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 2,050 Albertans are employed in the Sheet Metal Workers occupational group which is expected to grow 1.9 to 2.9 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 30 to 60 **new** positions will be created each year **in addition** to job openings created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Apprentice sheet metal workers earn at least 50 per cent of the journeyman wage rate in their place of employment in the first year, 65 per cent in the second, 75 per cent in the third and 85 per cent in the fourth. According to the Alberta Provincial Apprenticeship Committee for this trade, journeyman wage rates vary, but generally range from **$18 to $32 an hour plus benefits** (2005 estimate).

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Sheet Metal Workers occupational group working part-time or full-time earned from **$21,400 to $82,800 a year.** The average salary was **$53,100 a year.**

Other Sources of Information

Alberta Apprenticeship and Industry Training offices website: www.tradesecrets.org

Alberta Construction Industry "Trade Up!" website: www.careersconstruction.com

Calgary Construction Association website: www.cca.cc

Construction Sector Council website: www.csc-ca.org

Related Occupational Profiles

Aircraft Maintenance Engineer
Boilermaker
Recreation Vehicle Service Technician
Refrigeration and Air Conditioning Mechanic
Structural Steel and Plate Fitter

Related High School Subjects

Construction Technologies; Design Studies; Fabrication Studies; Mathematics; and Physical Education

Related Post-Secondary Fields of Study

Trades, Industrial and Related Training

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Shipper and Receiver

Produced OCTOBER 2005

Shippers and receivers wrap, pack and unpack, store, ship, receive and record the movement of parts, supplies, materials, equipment and stock to and from retailers, wholesalers, manufacturing companies, and other commercial and industrial organizations.

NOC Number(s): 1471
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **M O d**

Duties

Shippers and receivers' duties vary depending on the size and nature of the organization. In small companies, one shipper and receiver may be responsible for all shipping and receiving. In larger organizations, responsibilities may be divided among several shippers and several receivers.

In general, shippers and receivers perform the following tasks or supervise others who perform these tasks:

- determine the least expensive and quickest method of shipment, arrange delivery, and prepare bills of lading, invoices and other shipping documents
- assemble containers and crates, pack goods to be shipped and attach packing slips (identifying information and shipping instructions)
- direct delivery trucks to shipping doors or designated marshalling areas, and help load and unload goods safely
- inspect and count items received, check them against invoices or other documents, record shortages and reject damaged goods
- unpack and store goods in the appropriate storage areas
- comply with transportation of dangerous goods legislation
- keep accurate records of items received and where they are stored
- retrieve stored items and trace lost shipments as needed
- conduct regular safety inspections, maintain safe working conditions, report safety hazards and ensure safety equipment is in good working order.

Depending on the employer, shippers and receivers also may:

- operate forklifts, hand trucks or other materials-handling equipment
- type address labels or use computers to create shipping labels and perform record-keeping functions
- use special barcoding devices to put number codes on items and retrieve information from codes
- prepare customs declarations and export documents
- call customers or carriers to co-ordinate pick-up and delivery, or have inventory items inspected
- inspect received goods, fill out forms for damaged and returned items, and route them correctly
- contact vendors to resolve problems or contact service depots to arrange for repairs
- order replacement items.

Working Conditions

Shippers and receivers work mostly indoors, usually in warehouses which may be noisy or hot/cold when loading doors are open. They may work outdoors on loading platforms or at ground level to prepare larger items for shipping or storage.

Shippers and receivers spend most of their time on their feet. Depending on the nature of the goods handled, they may be required to routinely lift items weighing up to 25 kilograms. They use hand trucks or other equipment to move heavier items. For occupational health and safety reasons, shippers and receivers may be required to wear protective gear such as steel-toed footwear, hard hats or ear protectors. Some wear company uniforms.

Most shippers and receivers work 40 hours, five days a week. In large warehouses, they may work shifts.

Personal Characteristics

Shippers and receivers need the following characteristics:

- the physical strength and stamina required to lift and move goods repeatedly
- the ability to write legibly or type well enough to enter items on forms or computers
- good organizational skills
- the ability to work well with others
- a courteous, helpful attitude.

They should enjoy having clear rules and organized methods for their work, operating equipment such as computers and fork lifts, and overseeing loading and unloading activities.

Educational Requirements

Shippers and receivers are **trained on the job** and must continue acquiring new skills to keep up with technological advances.

Although there is no standard minimum education requirement, most employers prefer to hire high school graduates or graduates of related training programs. Computer and warehouse experience, or knowledge of Workplace Hazardous Materials Information System (WHMIS) and Transportation of Dangerous Goods (TDG) regulations are definite assets. Training in rigging procedures is important for shippers and receivers who are required to hook up lifting devices.

In Alberta, the following sources offer warehousing programs:

- **Alberta Apprenticeship and Industry Training** offers a training program leading to an Alberta Occupational Certificate. For more information, see the Warehousing Professionals occupational profile.
- **Calgary Board of Education Chinook Learning Services** in Calgary offers an eight course Warehousing certificate program. Applicants must be at least 17 years of age and Canadian citizens or landed immigrants. Basic math and reading skills are required.
- **Northern Alberta Institute of Technology** in Fairview offers a Warehouse Training Certificate of Proficiency program by non-distance and distance education. The entrance requirement for Level 1 of the program is English 10 or 13 and Grade 10 math, or equivalent.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

(section revised JANUARY 2006)

Most shipping and receiving jobs are in urban centres where manufacturers, wholesalers and large retailers locate their warehouses. In small establishments, shippers and receivers may have additional duties such as cleaning, stocking shelves or filing. In some large organizations, union membership is a requirement of employment.

With additional education or training, shippers and receivers may move into related occupations such as warehousing or parts technician (for more information, see the Parts Technician and Warehousing Professionals occupational profiles). In some organizations, shippers and receivers also may move into positions in other parts of the organization (e.g. junior buyer positions).

In Alberta, over 75 per cent of people employed as shippers and receivers work in the following industries:

- **Wholesale Trade**
- **Retail Trade**
- **Transportation and Warehousing**
- **Other Manufacturing**
- **Food and Beverage Products Manufacturing**
- **Metals, Metal Fabrication and Machinery Manufacturing**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

About 12,000 Albertans are employed in the Shippers and Receivers occupational group which is expected to grow 1.1 to 2.1 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 130 to 260 **new** positions will be created each year **in addition** to job openings created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Shippers and Receivers occupational group working part-time or full-time earned from **$12,000 to $97,800 a year.** The average salary was **$28,600 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Apprenticeship and Industry Training website: www.tradesecrets.org

Related Occupational Profiles

Furniture Mover
Mail Sorter
Parts Technician
Retail Shelf Stocker
Station Attendant/Ramp Service Agent
Warehousing Professionals

Related High School Subjects

Language Arts; Logistics; Management and Marketing; Mathematics; and Physical Education

Related Post-Secondary Fields of Study

Trades, Industrial and Related Training

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Sign Language Interpreter

Produced MARCH 2005

American Sign Language (ASL) - English interpreters facilitate communication among deaf, hard of hearing and hearing people, using both English and ASL.

NOC Number(s): 5125.3
Minimum Education: 2 years post-secondary education/training
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: **M I s**

Duties

The process of interpreting is the same regardless of the languages involved. A message from one language and cultural context must be expressed accurately in another language and cultural context. An interpreter's goal is to make this transition without changing meaning.

Sign language interpreters provide communication services in a variety of settings including:

- meetings and appointments in business, legal, medical and social service offices
- educational settings
- religious services and ceremonies
- musical and theatrical performances
- conferences and workshops.

Interpreters working in educational settings must read all course materials and texts beforehand to become familiar with course terminology, and preview any audio/visual materials used in the course. ASL-English interpreters working in school settings may interpret:

- for teachers and students in the classroom and in labs
- during parent/teacher interviews
- at tutorial sessions
- in other situations (e.g. when deaf students wish to use support services, participate in extra-curricular activities or attend school meetings).

Interpreters must follow a strict code of ethics that states, in part, that all information must remain strictly confidential. Everything that is spoken or signed is interpreted. Interpreters do not counsel, advise or interject their personal opinions.

Working Conditions

Working environments and hours depend on the job and assignment. Interpreters working for interpreter referral services or agencies may interpret at a doctor's office one day and, depending on their qualifications, interpret in court the next day. Or, they may interpret for television or in front of large crowds at conferences or banquets.

Depending on the length of the assignment, number of clients and complexity of the task, interpreters may work in teams to reduce the risk of repetitive strain injuries such as carpal tunnel syndrome.

Freelance interpreters work irregular hours. Typically, they charge a two hour or half-day minimum and require 48 hours notice of cancellation.

Personal Characteristics

Sign language interpreters need the following characteristics:

- a nonjudgemental attitude
- the ability to maintain client confidentiality
- excellent interpersonal and communication skills
- flexibility

- objectivity
- physical stamina
- self-discipline.

Interpreters should enjoy the process of interpreting and facilitating communication.

Educational Requirements

Those interested in becoming ASL-English interpreters **must be fluent in English and American Sign language (ASL).**

Although certification is not required, employers generally prefer to hire interpreters who have experience in the deaf community or related post-secondary education, and are certified by the Association of Visual Language Interpreters of Canada (AVLIC) or the Registry of Interpreters for the Deaf (RID) in the United States.

In Alberta, ASL classes are offered through the continuing education departments of post-secondary institutions and local schools. Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

(section revised JANUARY 2006)

ASL-English interpreters may be employed by institutions, work on a freelance basis or work for interpreter referral services. Interpreters in educational settings may work in elementary, secondary and post-secondary schools, and in schools for the deaf. Interpreters who have business or administrative skills may be hired to co-ordinate interpreting services for agencies, schools (especially post-secondary institutions) or conventions and other short-term assignments.

Freelance interpreters may find that there is less work available during the summer months.

Sign language interpreters are part of the larger National Occupational Classification 5125: Translators, Terminologists and Interpreters. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Professional and Technical Services**
- **Public Administration**
- **Educational Services**
- **Information, Culture and Recreation.**

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 700 Albertans are employed in the Translators, Terminologists and Interpreters occupational group which is expected to grow 2.2 to 3.2 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 10 to 30 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since sign language interpreters form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for sign language interpreters.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Incomes and benefits vary considerably in this occupation. Most interpreters are paid per hourly rate, often by an interpreter service or agency.

According to the **2005 Alberta Wage and Salary Survey**, part-time or full-time starting salaries for Albertans working in the Translators, Terminologists and Interpreters occupational group ranged from **$17,100 to $33,700 a year.** After three years, salaries ranged from **$35,800 to $41,900**. The average salary was **$35,600 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Chapter of the Registry of Interpreters for the Deaf (ACRID) website: www.compusmart.ab.ca/acrid

Association of Visual Language Interpreters of Canada (AVLIC) website: www.avlic.ca

Related Occupational Profiles

Interpreter
Translator

Related High School Subjects

Language Arts; and Languages (other than English)

Related Post-Secondary Fields of Study

Humanities and Languages

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Singer

Produced MAY 2003

Singers perform musical arrangements as soloists or members of vocal groups or choirs.

NOC Number(s): 5133.2
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **M i d**

Duties

Singers perform for live audiences and in recording studios. They usually specialize in particular types of music (popular, country, jazz, concert, recital, oratorio or opera).

The careers of classically trained singers who perform mostly opera, musical theatre, chamber music and choral music are quite different from those of singers who perform popular music such as rock, country, blues and jazz. Popular singers need business and entrepreneurial skills as well as talent. Hit songs can have a fairly short life and singers may work for years without finding commercially successful songs.

Singing for many artists is more than just having a good voice; it is a lot of hard work as well. In addition to rehearsing and performing, popular singers:

- look for new material that fits their particular style and could be added to their live performances or next recordings
- audition or prepare and submit audition tapes to obtain work
- work with business agents or managers to find work and negotiate contracts.

Classical singers specialize in a particular voice type (e.g. soprano, contralto, tenor, baritone, bass). In addition to rehearsing, performing and looking for work, they must:

- learn new music (often written in other languages)
- research particular roles to find out more about the character they are portraying or the period of history in which the piece is set
- work with vocal coaches to rehearse for upcoming stage roles
- learn fencing, acting and dancing as required for dramatic singing roles.

All singers must practice daily to maintain the elasticity of their voices throughout their singing careers. If they know the repertoire well, rehearsals may only take a short time; however, if singers must learn new repertoire or new roles (e.g. in an opera or musical) practice sessions may take several weeks or months.

Recording sessions for radio commercials and film soundtracks require singers to sight read their parts. They often have to learn new pieces of music within two or three takes.

Working Conditions

Singers work primarily in larger centres where recording studios are usually located and most concert productions are staged. They work long hours, day and evening, rehearsing and performing. Most performances are in the evenings and on weekends.

Singers must be prepared to travel wherever work is available. To promote new recordings, they may go on national or regional tours.

Personal Characteristics

Singers need the following characteristics:

- vocal talent and a discerning ear for music
- ambition, self-discipline and the ability to handle criticism and rejection

- good communication skills
- good health and stamina
- a dramatic stage presence and the ability to sense the mood of an audience and respond accordingly
- the ability to work under pressure
- the ability to work with a variety of people
- a good memory for music.

They should enjoy studying and rehearsing music, diverting and entertaining audiences, and developing their own style.

Educational Requirements

(section revised JANUARY 2006)

Like most other artists, singers need good business sense and an understanding of how to promote themselves to agents and managers.

Singers must learn to entertain. Entering amateur competitions, recitals and music festivals as early as possible provides practice at performing in front of an audience. Because the voice changes during adolescence, many singers wait until later to commit themselves to a career in singing. Learning to play an instrument provides good grounding in sight reading and ear training. Although many popular singers have little formal music training, there is a growing trend for professional contemporary singers to pursue formal technical training.

Finding a singing teacher who is competent and well versed in either classical or popular styles is important. Singing lessons are offered by various music conservatories, independent teachers and post-secondary music departments. Courses in other areas of music such as accompanying, arranging, composing and music theory are useful too.

It is not necessary to have a degree or diploma in music to become a singer. However, the comprehensive music education offered in post-secondary programs can be very valuable. In Alberta, the following post-secondary institutions offer music programs with voice-related specializations:

- **Alliance University College** in Calgary offers a four year BA in Music. The entrance requirement is five senior matriculation level courses including English and math with an minimum overall average of 60 per cent.
- **Banff Centre for the Arts** offers a variety of short term music programs in vocal performance. Admission is based on an audition and an interview. Participants must have spent time in formal studies or in the music profession.
- **Canadian Nazarene University College** in Calgary offers a three and four year BA in Music. The entrance requirement is a high school diploma with a minimum average of at least 60 per cent in five Grade 12 subjects including English, and math or a second language.
- **Grant MacEwan College** in Edmonton offers a two year Music diploma program with a performance specialization. The emphasis in this program is on jazz and commercial music. The entrance requirement is a high school diploma or equivalent, and a skills appraisal.
- **Mount Royal College** in Calgary offers a two year Music Performance diploma program with a specialization in vocal music. The entrance requirements are a high school diploma or equivalent, performance skills equivalent to Grade 10 Conservatory, an audition and a placement test in music theory, history and keyboard.
- **Red Deer College** offers a two year Music diploma program with a specialization in performance. The entrance requirements are a high school diploma with English 30 or 33 or equivalent, an audition and an examination.
- **University of Alberta** in Edmonton offers four year degree programs and five year combined degree programs in Music. The Bachelor of Music program has a specialization in performance (voice). The entrance requirement is a high school diploma with an average of at least 72 per cent in English 30 and four of the following subjects: a 30-level language other than English, a second 30-level language other than English, Biology 30, Chemistry 30, Physics 30, Math 30, Pure Math 30, Math 31, Science 30, one approved Fine Arts subject. An audition, music rudiments exam and aural skills exam are required. The University of Alberta in Camrose also offers bachelor degree programs in music.
- **University of Calgary** offers a four year degree program with a specialization in performance (voice). The entrance requirements are a high school diploma with an average of at least 72 per cent in English 30 and four of the following subjects: Social Studies 30, Pure Math 30, Applied Math 30, Math 31, Biology 30, Chemistry 30, Physics 30, Science 30, a 30-level language other than English, Music 30 or one five credit Grade 12 subjects. An audition and interview are also required.
- **University of Lethbridge** offers four year degree programs and five year combined degree programs with an applied specialization including studio courses. The entrance requirement are an average of at least 65 per cent in English 30, three other appropriate 30-level subjects and a fifth Grade 12 subject, an appropriate music background and an audition.

For a complete listing of Alberta post-secondary institutions that offer music programs, see the Instrumental Musician occupational profile.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

(section revised JANUARY 2006)

Singers from both popular and classical backgrounds may work in:

- concert halls, churches and theatres as soloists or as part of a group
- radio and television studios (doing commercials)
- recording studios
- festivals, national expositions or other large cultural events
- musical theatre and operas.

Popular music singers often start out singing at school dances in a band. They may sign on with a booking agent who, for a percentage of the contract, finds them work in bars and clubs. Classical singers may have fewer options available for singing contracts. Because singing is not always a full-time occupation, singers often have other jobs as well.

Singers need to build their reputations by building mass appeal on recordings or with live audiences. It also helps to develop contacts with music directors, music agents, conductors, songwriters and music producers.

Singers are part of the larger National Occupational Classification 5133: Musicians and Singers. In Alberta, most people employed in this classification work in the following industries:

- **Educational Services**
- **Information, Culture and Recreation**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

About 3,950 Albertans are employed in the Musicians and Singers occupational group which is expected to grow 1.2 to 2.2 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 40 to 90 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since singers form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for singers.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

The market for classical singers is small and very competitive, especially for female singers.

Salary

(section revised OCTOBER 2005)

Performers or their agents negotiate fees for live performances with owners or managers. Therefore, singers' incomes can fluctuate dramatically, depending on how much work there is available.

Singers may belong to different unions and associations that set wage scales. Singers involved in recording, live performances and commercials may belong to the American Federation of Musicians of the United States and Canada. Singers in musical theatre and in operas may belong to the Canadian Actors Equity Association. Singers performing for film, television and radio may belong to the Alliance of Canadian Cinema, Television and Radio Artists.

According to the **2005 Alberta Wage and Salary Survey**, Albertans working part-time or full-time in the Musicians and Singers occupational group earned **up to $47,500 a year.** Those with three years of experience earned from **$16,500 to $39,700.** The average salary was **$33,000 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Recording Industry Association website: www.aria.ab.ca

Alliance of Cinema, Television and Radio Artists website: www.actra.ca

Calgary Musicians Association website: www.calgarymusicians.org

Canadian Actors' Equity Association website: www.caea.com

Cultural Human Resources Council website: www.culturalhrc.ca

Edmonton Musicians Association website: www.afm.org/390/

Related Occupational Profiles

Actor
Choral Conductor
Instrumental Musician
Songwriter

Related High School Subjects

Cosmetology Studies; Fine Arts (Music); Language Arts; Languages (other than English); Management and Marketing; Mathematics; Physical Education; Science; and Social Studies

Related Post-Secondary Fields of Study

Fine Arts and Performing Arts

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Social Worker

Produced DECEMBER 2005

Social workers help individuals, families, groups, communities and organizations develop the skills and resources they need to enhance their social functioning and social environments.

NOC Number(s): 4152
Minimum Education: 2 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **S I D**

Duties

Specific duties and client populations vary from setting to setting. Social workers may work in:

- family counselling agencies providing assessment, counselling, treatment and referral services to individuals and their families in areas such as parenting and marriage counselling
- health care teams in hospitals, mental health clinics or home care agenices
- community health teams working with patients and family members to overcome emotional, behavioural, social and financial difficulties
- correctional services working with youth and adult offenders
- the education system providing counselling and consultation services for students, parents and teachers
- government social service departments delivering social policy and advocacy programs such as income support programs, child protection programs, childcare programs or foster care and adoption programs
- community agencies developing prevention and intervention programs to meet community needs (for example, addressing problems such as homelessness, family violence, addictions, racism)
- residential settings providing counselling, role modeling, crisis intervention, assessment, advocacy and referral services for children, adolescents, people with disabilities or the elderly
- employment assistance programs and private agencies providing employment-related assessment, counselling, treatment and referral services
- program development, organizational development and evaluation
- social research, planning and advocacy organizations
- community and economic development with disadvantaged groups
- international social work in developing countries
- settlement and immigration services for new Canadians
- providing assessment and counselling services, training seminars or services related to policy development, program planning, evaluation and research.

Working Conditions

Working conditions vary widely. Social workers often must divide their time between face-to-face contact with clients and completing assessments, case studies/plans and reports. Direct practice may include interviewing clients in their homes, family counselling sessions, group work, attending meetings and co-ordinating services with other helping professionals and community agencies.

Positions involved in community work, health care, advocacy, crisis intervention and investigation, and counselling sessions, seminars and workshops may require evening or weekend work.

Personal Characteristics

Social work is a demanding profession requiring:

- maturity and emotional stability
- high energy
- patience

- sensitivity to and an understanding of beliefs and values not your own
- good communication skills
- critical thinking skills and good judgement
- integrity
- resourcefulness.

Social workers should enjoy working with and counselling people, finding innovative solutions to problems and taking responsibility for their work.

Educational Requirements

Social workers must have a diploma, bachelor's degree or master's degree in social work. Some employers require a minimum of a Bachelor of Social Work (BSW) degree. Other requirements may include a criminal record check, a valid driver's license and the use of a vehicle.

In Alberta, the following institutions offer two year diploma programs in social work:

- **Grant MacEwan College** in Edmonton
- **Maskwachees Cultural College** in Hobbema and Edmonton, and through **Blue Quills First Nations College** in St. Paul
- **Mount Royal College** in Calgary and through **Medicine Hat College**
- **Northern Lakes College** in Slave Lake
- **Portage College** in Lac La Biche
- **Red Deer College**

Entrance requirements for these programs vary but generally include a high school diploma or equivalent with specified minimum marks in English Language Arts 30-1 or English 30, or equivalent. Social Studies 30 may be recommended or required. Other requirements may include a minimum age, related volunteer work or life experience, references, a criminal record check and a Child Welfare Information System check (if required by a field practicum agency).

The **University of Calgary** offers a BSW degree program in Calgary, Edmonton, Lethbridge, Grande Prairie and various rural and remote aboriginal communities. To apply for admission to this program, students must meet the basic admission requirements for the University of Calgary and specific requirements for different routes in the program. A minimum 2.3/4 grade point average (GPA) is required. The basic admission requirement for the University of Calgary is a high school diploma or equivalent with an average of at least 70 per cent in English Language Arts 30-1 or English 30 and four other appropriate Grade 12 subjects. Applicants for the program may be University of Calgary transfer students, other transfer students, Alberta social work diploma graduates or after-degree students.

The University of Calgary also offers MSW and PhD programs in social work. The entrance requirement for the master's degree program is an accredited BSW or any other bachelor's degree with at least two years of experience (volunteer or paid) in the social service field, and a grade point average (GPA) of at leat 3.0/4.

University transfer programs are offered by colleges and universities located throughout the province. It is the student's responsibility to ensure that the courses they choose to take will be accepted for credit by the University of Calgary.

Distance education programs are offered by post-secondary institutions outside of Alberta.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Other Requirements

Under Alberta's Health Professions Act and Social Workers Profession Regulation, registration with the Alberta College of Social Workers (ACSW) is mandatory if you meet identified educational requirements and provide professional services directly to the public, teach the practice of the profession to members or students of the profession, or supervise registered members who provide services to the public. Registered members who are authorized by the College perform restricted activities defined in the Regulation. Only registered members may use the protected titles Social Worker or Registered Social Worker.

Employment and Advancement

(section revised JANUARY 2006)

Social workers are employed by:

- government departments

- school boards
- community health and social service agencies
- hospitals and long term care organizations
- mental health clinics
- family and social service agencies
- employee assistance programs
- correctional services and agencies
- aboriginal band councils
- non-profit community agencies.

Social workers may advance to supervisory or administrative positions based on their level of education and work experience. Or, social workers may go into private practice in their areas of specialization. Those who have graduate degrees may move into post-secondary teaching and research positions.

In Alberta, over 75 per cent of people employed as social workers work in the **Health Care and Social Assistance** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Health Care and Social Assistance industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 5,500 Albertans are employed in the Social Workers occupational group which is expected to grow 1.9 to 2.9 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 100 to 160 **new** positions will be created each year **in addition** to job openings created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Salaries for social workers vary considerably depending on the employer and the worker's qualifications.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Social Workers occupational group working part-time or full-time earned from **$17,800 to $105,500 a year.** The average salary was **$48,700 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta College of Social Workers (ACSW) website: www.acsw.ab.ca

Related Occupational Profiles

Addictions Counsellor
Canadian Forces Personnel - Commissioned Officer
Career Development Professional
Child and Youth Care Worker
Community Health Representative
Correctional Services Worker
Expressive Arts Therapists
Family/Marriage Counsellor
Gerontological Specialist
Mediator
Mental Health Worker
Parole/Probation Officer
Psychiatric Nurse
Psychologist

Related High School Subjects

Communication Technology; Community Health; Language Arts; Languages (other than English); Mathematics; Science (Biology; and Chemistry); and Social Studies

Related Post-Secondary Fields of Study

Social, Community and Protective Services

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Sociologist

Produced NOVEMBER 2005

Sociologists systematically study and analyze human societies. They use distinct sociological perspectives to understand and explain the causes and consequences of social interaction.

NOC Number(s): 4169.8
Minimum Education: 6 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **I D M**

Duties

Sociologists carry out sociological research. They use various theoretical approaches and research methods (for example, historical studies, surveys, interviews, experiments, document analyses or observational studies) to examine:

- the nature of the relationship between the individual and society
- the attitudes, values and behaviour of people in groups (e.g. families, schools, racial and ethnic communities, workplaces, cities, rural locales, health care organizations, sports venues)
- the development and structure of groups, organizations and institutions (for example, law, education, marriage, religion)
- behavioural patterns and relationships (for example, patterns of dating, gender roles, prison life, workplace behaviours)
- areas of social concern such as crime, immigration, poverty, unemployment, health, aging, social injustice and population change
- social policy and legislation and its effects on society (for example, envrionmental policy, employment policy, same-sex marriage legislation, anti-terrorism legislation)
- aspects of social change such as cultural change, urbanization, changes in family lifestyles, globalization, science and technology, as well as organized efforts to change the direction of social life such as the women's movement, aboriginal movement, gay/lesbian movement, anti-racism movement, environmental movement, peace movement and anti-globalization movement.

Sociologists conduct studies, review journal articles and demographics, analyze information, identify social trends and interpret research data to increase our understanding of human social behaviour.

Working Conditions

Sociologists spend most of their time in office, classroom, library and computer laboratory environments. They spend many hours reading, analyzing data and writing reports. They also may teach or give public presentations relating to their work.

Sociologists sometimes travel to gather information in the field. They may visit a wide variety of settings such as workplaces, child care centres, busy downtown street corners, sports arenas, low-income housing complexes, ethnic communities, health care institutions or penitentiaries.

Personal Characteristics

Sociologists need the following characteristics:

- an interest in studying human interaction and social life
- good communication skills
- good organizational skills
- the ability to set aside their own convictions and analyze behaviour objectively.

They should enjoy organizing and integrating information to find innovative solutions to problems, and consulting with people.

Educational Requirements

Sociologists generally have a master's or doctoral degree in sociology. The entrance requirement for master's and doctoral degree programs is above average standing in the last two years of a four year bachelor's degree program, preferably an honours program.

Three year and four year degree programs which may include courses in sociology are offered by a number of post-secondary institutions across Alberta. The following institutions offer four year bachelor's degree programs specifically in sociology:

- **Athabasca University** offers a four year BA program in Sociology by distance education. Applicants must be at least 16 years of age.
- **Red Deer College** offers a BA program in Sociology in collaboration with the University of Calgary. Students must successfully complete a university transfer program before applying for admission to this program.
- The **University of Alberta** in Edmonton offers BA and BA (Honours) degree programs in Sociology, a BA degree program in Criminology, and MA and PhD programs in Sociology. Augustana Faculty in Camrose offers four year BA and B.Sc. programs in Sociology. The entrance requirement for the bachelor's degree programs is a competitive average (65 to 80 per cent) in English Language Arts 30-1 (or English 30), a 30 level language other than English or Pure Math 30 (or Math 30), and three other approved 30 level subjects (Social Studies 30 recommended). Students may apply to the honours program or the Criminology program after one year of university studies.
- The **University of Calgary** offers BA, BA (Honours), five year co-op BA degree programs and MA and PhD programs in Sociology. The entrance requirement for the bachelor's degree programs is a high school diploma or equivalent with a competitive average in English Language Arts 30-1 (or English 30), Pure Math 30 or Math 30 or 31, and three of the following: Biology 30, Chemistry 30, Physics 30, Science 30, Social Studies 30, a 30 level language other than English, one five-credit Grade 12 subject.
- The **University of Lethbridge** offers BA, BA (Honours), Bachelor of Arts and Science programs, a five year combined degree programs and a MA program in Sociology. The entrance requirement for the bachelor's degree programs is an average of at least 65 per cent in English Language Arts 30-1 (or English 30), three other appropriate 30 level subjects and a fifth Grade 12 subject.

Post-secondary institutions throughout the province offer university transfer programs that allow students to apply up to two years of study toward university bachelor's degree programs. It is the student's responsibility to ensure that the courses they choose to take will be accepted for credit at the institution to which they wish to transfer.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

(section revised JANUARY 2006)

Sociologists are employed by:

- consulting, marketing and polling firms
- federal, provincial and municipal governments
- universities and colleges
- large corporations.

A doctoral degree is generally required to teach and conduct research at the post-secondary level. Some sociologists are self-employed consultants who work on a contract basis for private industry and government departments.

Sociologists are part of the much larger National Occupational Classification 4169: Other Professional Occupations in Social Science. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Professional and Technical Services**
- **Public Administration**
- **Educational Services**
- **Health Care and Social Assistance**

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)

- **size of the occupation.**

Over 350 Albertans are employed in the Other Professional Occupations in Social Science occupational group which is expected to grow 1.5 to 2.5 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover. (**Note**: Since sociologists form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for sociologists.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Salaries vary considerably in this field depending on the employer, the responsibilites of the position and the sociologist's qualifications.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Other Professional Occupations in Social Science occupational group working part-time or full-time earned from **$31,800 to $79,600 a year.** The average salary was **$54,900 a year.**

University professors may earn up to $140,000 a year (2005 estimate).

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Canadian Sociology and Anthropology Association (CSAA) website: www.csaa.ca

Related Occupational Profiles

Demographer
Political Scientist

Related High School Subjects

Communication Technology; Language Arts; Languages (other than English); Mathematics; Science; and Social Studies

Related Post-Secondary Fields of Study

Social Sciences, Law and Religious Studies

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Software Engineer

Produced JULY 2004

Software engineers research, design, evaluate, modify, integrate, test and maintain software applications, technical environments, operating systems, embedded software, information warehouses and telecommunications software.

NOC Number(s): 2173
Minimum Education: 4 years post-secondary education/training
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: **I M D**

Duties

Software engineers design, develop and evaluate software such as business and engineering applications, process control systems and systems software. This may involve developing re-usable software that can be adapted for more than one application. In some cases, they develop special purpose embedded software for inclusion in products such as washing machine controls and automobile engines. Their work involves:

- consulting with system users and analyzing user requirements
- developing design specifications
- developing strategies to assure fault tolerance and system security
- designing software products and user interfaces
- producing software designs
- modifying existing software to correct errors, adapt to new hardware, increase performance or upgrade user interfaces
- testing and validating programs prior to installation
- installing programs and analyzing performance
- maintaining programs once they are in use
- integrating with legacy systems and third party systems.

They also may be responsible for:

- preparing proposals for information systems
- integrating and testing system software and hardware components
- writing product documentation
- providing cost analyses and obtaining quotes from suppliers
- determining system performance standards
- managing software projects
- assisting in the marketing and sale of software
- supervising the work of technical staff.

Software engineers must constantly update their knowledge and skills to keep up with rapid advancements in computer technology. They often work as members of design teams which may include programmers, hardware engineers, technologists, technicians and marketing and manufacturing specialists.

Working Conditions

Software engineers spend most of their time in office environments using computer terminals. They may be required to work a considerable amount of overtime and experience a great deal of pressure to meet deadlines.

Personal Characteristics

Software engineers need the following characteristics:

- excellent oral and written communication skills
- the ability to work effectively in a team environment
- a capacity for details
- good decision-making and problem-solving skills
- an aptitude for mathematics and science
- the ability to teach others
- good time-management skills
- an appreciation of the value of a tidy program style.

They should enjoy being innovative, and performing tasks that require precision and a systematic approach.

Educational Requirements

Software engineers must have a **four year degree in software engineering or a related discipline** such as electrical engineering or computer science. Some employers hire only software engineers who have a master's degree in engineering. A doctoral degree is generally required for a career in research and development.

The **University of Alberta** in Edmonton and the **University of Calgary** offer four year Bachelor of Science (B.Sc.) degree programs in computer and electrical engineering. The minimum admission requirement is a high school diploma with an overall average of 78 or 80 per cent in the following Grade 12 subjects:

- English 30
- Pure Math 30
- Math 31
- Chemistry 30
- Physics 30.

Programming experience at the high school level is an asset. The first year of studies is a common year of study for all engineering disciplines. Students specialize in computer engineering in the second, third and fourth years.

Both universities offer co-operative education/internship programs in engineering that consist of periods of academic study alternating with periods of planned work experience in industry. Students usually take five years to complete these programs.

Post-secondary institutions throughout the province offer university transfer programs that allow students to apply up to two years of study toward university bachelor's degree programs. It is the student's responsibility to ensure that the courses they choose to take will be accepted for credit at the institution to which they wish to transfer.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Other Requirements

Under Alberta's Engineering, Geological and Geophysical Professions Act, you must be a registered member of the Association of Professional Engineers, Geologists and Geophysicists of Alberta (APEGGA) to practice as a Professional Engineer. You do **not** have to be registered if you work under the direct supervision of a Professional Engineer and do not call yourself a Professional Engineer.

Information Systems Professional is a protected title under Alberta's Professional and Occupational Associations Registration Act. This means that to call yourself an Information Systems Professional, you must be a registered member of the Canadian Information Processing Society of Alberta (CIPS Alberta). You do **not** have to be registered if you do not call yourself an Information Systems Professional.

Employment and Advancement

(section revised JANUARY 2006)

Software engineers are employed by:

- companies that devise embedded software for inclusion in other products
- companies that develop industrial instrumentation and process control products
- consulting companies that provide software-related services

- manufacturing companies
- companies in the energy sector (e.g. oil and gas companies)
- educational institutions
- governments
- research institutions
- software manufacturers
- Internet-based businesses
- software marketing companies.

Working in smaller companies requires a broader range of skills. Duties with larger companies may be more specialized.

With experience, software engineers can move into other engineering disciplines, become private consultants or operate their own businesses. They can also move into supervisory positions and management positions. Those who wish to advance in management may need additional training in business administration.

Software engineers are part of a larger computer engineers occupational group. In Alberta, over 75 per cent of people employed as software engineers work in the following industries:

- **Professional and Technical Services**
- **Oil and Gas Extraction**
- **Public Administration**
- **Other Manufacturing**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 2,250 Albertans are employed in the Software Engineers occupational group which is expected to grow 2.7 to 3.7 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 60 to 90 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since software engineers form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for software engineers.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised SEPTEMBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Software Engineers occupational group working part-time or full-time earn from **$34,300 to $118,500 a year.** The average salary was **$73,900 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Association of Professional Engineers, Geologists and Geophysicists of Alberta (APEGGA) website: www.apegga.org

Canadian Information Processing Society (CIPS) website: www.cips.ca

Related Occupational Profiles

Computer Engineer
Computer Programmer
Data Administrator
Information Systems Quality Assurance Analyst
Interactive Media Developer
Systems Auditor
Systems Tester
Web Designer

Related High School Subjects

Communication Technology; Design Studies; Electro-Technologies; Information Processing; Language Arts; Management and Marketing; Mathematics; and Science (Chemistry; and Physics)

Related Post-Secondary Fields of Study

Engineering, Architecture and Related Studies

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Soil Scientist

Produced SEPTEMBER 2005

Soil scientists study the composition, distribution, development and behaviour of soils and the interaction of soils with soil organisms, animals and plants.

NOC Number(s): 2115.2
Minimum Education: 4 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **I O D**

Duties

Soil scientists study the effects of people's activities on soil, develop methods to conserve and manage soil, and develop plans to remediate (fix) contaminated and disturbed soils. Their duties and responsibilities vary considerably from one job to another. In general, they:

- identify soils on the basis of soil properties, horizons, geographic locations, land use and landscape position
- conduct experiments to investigate how soils form, change and interact with land-based ecosystems and living organisms
- plan and supervise land conservation and reclamation programs for industrial development projects
- study soil chemistry to determine chemical composition, concentrations, toxicity, movement and reactions with pollutants
- study soil biology to determine organic matter content and quality, microbial activity and the effects of organic matter loss
- study soil fertility and plant nutrient levels in soils for crop production
- study physical properties such as soil permeability, water-holding capacity, porosity and aggregate stability, and their effects on plants and soil organisms
- identify degraded soils and develop plans to improve their chemical, biological and physical characteristics
- study the effects of continuous cropping, direct seeding and other soil conservation practices and develop improved soil management practices for farmers and forestry companies
- survey undisturbed and disturbed lands for classification, inventory, mapping, environmental impact assessments, environmental protection planning and conservation and reclamation planning
- plan and supervise waste management programs for composting and farming
- review soil assessments and conservation and reclamation plans
- devise and develop new fertilizers
- assist in the development of improved measurement techniques, soil conservation methods, soil sampling devices and related technology
- prepare applications for regulatory approval and provide advice regarding the development of regulatory standards for land reclamation and soil conservation
- communicate research and project results to other professionals and the public and teach related courses, seminars or workshops.

Working Conditions

Soil scientists may work outdoors in the field or indoors in laboratories and offices. They generally work a standard work week but often spend additional time reading to keep up to date. Private consultants may work very long hours.

Some soil scientists travel in an assigned territory or to other regional, national or international research sites.

Personal Characteristics

Soil scientists need the following characteristics:

- the ability to communicate well, both in person and in writing, with the public and others who use soils (e.g. engineers, wildlife biologists, land use planners, farmers)
- the intellect, curiosity, creativity, patience and perseverance required to solve complex problems and keep up to date with new developments in the field
- the ability to work well independently or as part of a team
- the health and stamina required for field work.

They should enjoy:

- synthesizing information to investigate problems
- using laboratory and field instruments and equipment to perform tasks requiring precision
- supervising the work of technologists and technicians.

Educational Requirements

The minimum education requirement for a soil scientist is a bachelor's degree in agriculture, forestry, biological, earth or environmental sciences with a specialization in soils. Research positions require a related master's or doctoral (PhD) degree. The entrance requirement for most master's degree programs is an acceptable average in a related four year bachelor's degree program. In addition, soil scientists must know provincial and federal legislation as it relates to their work.

In Alberta, the following institutions offer four year bachelor's degree programs with a specialization in soils:

- The **University of Alberta** in Edmonton offers four year Bachelor of Science (B.Sc.) degree programs in Agriculture, Environmental and Conservation Sciences, Environmental and Conservation Sciences/Native Studies Combined, and Forestry. The entrance requirement is a minimum average of 65 to 80 per cent in English Language Arts 30-1 or English 30, Pure Math 30 or Math 30, Biology 30, Chemistry 30 and one other approved 30-level subject. The University of Alberta also offers an Earth and Atmospheric Sciences program with a specialization in environmental earth sciences as well as master's and doctoral degree programs related to soil science. The entrance requirement for the Earth and Atmospheric Sciences program is a minimum average of 65 to 80 per cent in English Language Arts 30-1 or English 30, Pure Math 30 or Math 30, Physics 30, Chemistry 30 and one other approved 30-level subject.
- The **University of Calgary** offers four year B.Sc. degree programs in Earth Science and Environmental Science. The entrance requirement for both programs is a high school diploma with a competitive average in English Language Arts 30-1 or English 30, Pure Math 30, Chemistry 30 and two other approved Grade 12 subjects. Math 31 and Physics 30 are recommended for the Earth Science program. Math 31 is recommended for the Environmental Science program and Biology 30 is required for the biological sciences concentration in Environmental Science.
- The **University of Lethbridge** offers four year B.Sc. degree programs in Agricultural Studies, Geography, and Environmental Science. The entrance requirement for these programs is an average of at least 65 per cent in English Language Arts 30-1 or English 30, Biology 30, Chemistry 30 and Pure Math 30 or Math 30 plus a fifth Grade 12 subject. The univeristy also offers post-diploma degree programs in Agricultural Studies and Environmental Science for graduates of related post-secondary diploma programs (minimum grade point average required).

Post-secondary institutions throughout the province offer university transfer programs that allow students to apply up to two years of study toward university bachelor's degree programs. It is the student's responsibility to ensure that the courses they choose to take will be accepted for credit at the institution to which they wish to transfer.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

(section revised JANUARY 2006)

Soil scientists are employed by:

- post-secondary education institutions
- federal, provincial and municipal government departments
- fertilizer companies
- engineering and land appraisal firms

- coal, oil, gas and forestry companies
- consulting firms.

New graduates may work on a seasonal basis until they gain experience. A doctoral degree is usually required to direct and administer research programs or teach at the university level.

Salary increases and more demanding projects are the most tangible forms of advancement in this occupation. Advancement opportunities to administrative and supervisory positions are limited. Some soil scientists set up their own consulting firms and work on a contract basis.

Soil scientists are part of the larger National Occupational Classification 2115: Other Professional Occupations in Physical Sciences. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Professional and Technical Services**
- **Public Administration**
- **Oil and Gas Extraction**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 100 Albertans are employed in the Other Professional Occupations in Physical Sciences occupational group which is expected to grow up 1.5 to 2.5 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover. (**Note**: Since soil scientists form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for soil scientists.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Other Professional Occupations in Physical Sciences occupational group working part-time or full-time earned from **$35,800 to $103,700 a year.** The average salary was **$79,100 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Agriculture Institute of Canada (AIC) website: www.aic.ca

Alberta Institute of Agrologists (AIA) website: www.aia.ab.ca

Related Occupational Profiles

Agrologist
Chemist
Civil Engineer

Related High School Subjects

Agriculture; Communication Technology; Forestry; Language Arts; Mathematics; Science (Biology; Chemistry; and Physics); and Wildlife

Related Post-Secondary Fields of Study

Agriculture and Related Technologies; Environment, Forestry and Related Studies; and Sciences

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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OCC info Alberta Occupational Profiles

Alberta Human Resources and Employment

Songwriter

Produced MAY 2003

Songwriters may compose both the melody and the lyrics (words) to a song or write only the words.

NOC Number(s): 5132.2
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **I M d**

Duties

Songwriters write songs for particular events, for particular artists or for particular mediums (e.g. musical theatre, radio advertising, film or television). They may be lyricists or librettists:

- **Lyricists** write only the words to a tune or melody that someone else has composed. They write songs in all musical styles including rock, jazz, pop and country.
- **Librettists** write the words sung in musical dramas, operas, oratorios and other dramatic classical song literature. With words, they create the scenes and characters that tell the story.

Song writing is a very personal process; there are as many ways to write a song as there are people who write them. However, in general, songwriters:

- may write the lyrics first and the melody later, or compose the melody first and the words later
- rework both lyrics and melody many times to produce a marketable product.

To market their work, songwriters may:

- ask record company representatives and music publishers to come out to live performances at clubs and concerts
- make demonstration tapes that present songs in a professional manner and send the tapes to performers, record company representatives and music publishers.

Songwriters may record demo tapes on home sound recording systems at a cost of a couple of hundred dollars, or in professional studios at a cost of several thousand dollars. Many songwriters are musicians and singers themselves, and record their own demos, accompanying themselves on the piano or guitar. They may hire side musicians or singers to perform as well.

The ultimate goal for many songwriters is to have their songs chosen by record companies, music publishers or recording artists, and have them turn it into a hit single.

Working Conditions

Songwriters often work alone, although they sometimes work together as collaborators. Their hours of work and working environments vary considerably. Those who write advertising jingles for radio and television commercials must be able to work under the pressure of tight deadlines.

Personal Characteristics

Songwriters need the following characteristics:

- creativity and talent
- the flexibility required to work with other people's ideas and suggestions
- the self-motivation and self-discipline required to keep writing
- the perseverance and determination required to handle rejections by publishers and recording artists.

It may take years before a songwriter has a successful song on the music charts.

Songwriters should enjoy the creative process and expression involved in their craft.

Educational Requirements

There is **no formal training required** to be a songwriter. However, the ability to play one or more instruments is helpful for working out melodies, and knowledge of music theory, harmony, arrangement and composition are helpful. Computer skills are also helpful because more and more songwriters are recording their own demo tapes.

Songwriters need an excellent working knowledge of the language in which they choose to write, and the ability to work within the structures required for songs.

The **Society of Composers, Authors and Music Publishers of Canada** offers song writing workshops and seminars periodically in larger centres across Canada.

Employment and Advancement

(section revised JANUARY 2006)

Many people can write songs, but relatively few can write songs that have commercial value. For some songwriters, writing advertising jingles is a stepping stone to becoming a lyricist or songwriter. These songwriters may work under contract with advertising agencies or radio and television stations.

Most songwriters send copies of their demo tapes to:

- music publishers
- recording artists
- music producers.

Publishers, singers and producers are always on the lookout for good material and listen to hundreds of new songs each year. However, they are often overwhelmed with requests to listen to new material so novice songwriters often find it difficult to get their music heard.

Songwriters are part of the larger National Occupational Classification 5132: Conductors, Composers and Arrangers. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Information, Culture and Recreation**
- **Repair, Maintenance, Personal and Other Services**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving exisiing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 300 Albertans are employed in the Conductors, Composers and Arrangers occupational group which is expected to grow 1.2 to 2.2 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover. (**Note**: Since songwriters form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for songwriters.)

Salary

(section revised OCTOBER 2005)

Songwriters are paid royalties for performances of their work. In Canada, performance rights royalties are collected and distributed by the Society of Composers, Authors and Music Publishers of Canada. Therefore, to receive royalties, songwriters must be members of SOCAN and register their work.

Songwriters earn royalties from:

- the sale of tapes, compact discs and videos (mechanical royalties)
- the sale of sheet music and the use of their music in films (synchronization royalties)
- radio, television and motion picture performances of their music and live performances in venues such as bars and clubs, exhibitions and concert halls (provided certain criteria are met).

Songwriters who do not assign their works to publishers are entitled to all of the royalties for performances of their work. Those who assign their works to publishers usually receive 50 per cent. Some songwriters own and operate their own publishing companies but songwriters new to the field usually earn more if they have a contract with an established publishing company.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Conductors, Composers and Arrangers occupational group working part-time or full-time earned an average salary of **$22,900 a year**.

Other Sources of Information

Alberta Recording Industry Association website: www.aria.ab.ca

Cultural Human Resources Council website: www.culturalhrc.ca

Society of Composers, Authors and Music Publishers of Canada website: www.socan.ca

Related Occupational Profiles

Advertising Copywriter
Choral Conductor
Composer
Creative Writer
Music Copyist
Orchestra/Band Conductor
Orchestrator/Arranger
Singer

Related High School Subjects

Communication Technology; Fine Arts (Music); Information Processing; Language Arts; and Management and Marketing

Related Post-Secondary Fields of Study

Fine Arts and Performing Arts

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Special Event Co-ordinator

Produced APRIL 2003

Special event co-ordinators plan, organize and co-ordinate conferences, meetings, seminars, exhibitions, trade shows, festivals and other special events.

NOC Number(s): 1226
Minimum Education: 2 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: D S I

Duties

Special event co-ordinators' duties vary depending on the nature of the events they organize but, in general, they:

- identify the objectives of the event and determine the requirements that must be met to accomplish those objectives (e.g. facilities and services)
- meet with trade and professional associations and other groups to promote conference, convention and trade show services and research potential sponsors
- meet with sponsors and organizing committees to plan event scope and format, establish and monitor budgets, review administrative procedures and discuss progress
- co-ordinate services (e.g. accommodation and transportation for participants, catering, signage, displays, translation services, audio-visual equipment, printing, security) and deal with any problems that arise
- plan entertainment and social gatherings for participants
- receive and process registrations
- hire, train and supervise volunteers and support staff
- negotiate contracts for services, approve invoices, maintain financial records, prepare or review final billing for the event and prepare reports.

Organizing a special event may require:

- developing or helping to develop a plan, program or agenda
- selecting sites and co-ordinating building and property services (e.g. audiovisual and technical details, decorations and/or seating)
- organizing admissions, transportation and related services such as emergency services
- marketing the event and promoting sponsorships
- negotiating rates with suppliers and controlling expenses
- designing and implementing public relations campaigns
- recruiting, training and motivating staff and/or volunteers
- preparing and distributing the event minutes.

Working Conditions

Special event co-ordinators may work on several projects at once and may have to travel to event sites. Long hours are often required, particularly just before and during an event. At times, the work is stressful.

Personal Characteristics

Special event co-ordinators need the following characteristics:

- excellent communication skills
- excellent organizational and time management skills
- problem solving skills
- the ability to negotiate agreements and mediate disputes
- the ability to work effectively with all sorts of people

- the ability to pay close attention to details
- the ability to work well under pressure and make responsible decisions quickly.

They should enjoy organizing and co-ordinating activities, and talking to people.

Educational Requirements

(section revised MAY 2005)

Most employers prefer to hire special event co-ordinators who have experience in the co-ordination or supervision of one or more events, and have related post-secondary education.

In Alberta, the following post-secondary institutions offer programs specifically about special events co-ordination.

- **Bow Valley College** in Calgary offers a 32 week Events Management Certificate program that includes four weeks practicum. The entrance requirement is English 20 or 23 and a Grade 10 math, or equivalent.
- **Lakeland College** in Sherwood Park offers a Special Events Co-ordinator certificate of training program through Continuing Education. The entrance requirement is high school diploma with English 30 or 33, English Language Arts 30-1 or 30-2 and Pure Math 10 or Applied Math 10.
- **Mount Royal College** in Calgary offers a six course Event Management certificate program through Continuing Education. Applicants must be at least 18 years of age.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

The following institutions offer programs related to hospitality and tourism:

- **Lethbridge Community College** offers a two year diploma program in Hotel and Restaurant Management. The entrance requirement is a high school diploma or equivalent with English 30 or 33, Math 30 or 33 or Pure or Applied Math 30.
- **Red Deer College** offers a two year Hospitality and Tourism diploma program with specializations in accounting and finance management, food and beverage management, and rooms and marketing management. The entrance requirement is a high school diploma or equivalent.
- The **Southern Alberta Institute of Technology (SAIT)** in Calgary offers a Hotel and Restaurant Management diploma program. The entrance requirement is a high school diploma or equivalent with English 30 or 33, and Pure or Applied Math 30 or Math 33.
- The **University of Calgary** Haskayne School of Business offers a four year Bachelor of Hotel and Resort Management (BHRM) degree program that may also be taken as a five year co-op program. The entrance requirement is a high school diploma with an overall average of at least 70 per cent in English 30, Math 30, and three other appropriate Grade 12 subjects, and a SAIT diploma in Hotel and Restaurant Management (or equivalent) with a grade point average of 3.0/4 or above. The University of Calgary also offers four year and five year co-op Bachelor of Commerce (B.Comm.) degree programs in Tourism and Hospitality Management.

Public colleges and private university colleges throughout the province offer university transfer programs that allow students to apply up to two years of study toward university bachelor's degree programs. It is the student's responsibility to ensure that the courses they choose to take will be accepted for credit at the institution to which they wish to transfer.

Other Requirements

(section revised OCTOBER 2005)

Alberta Tourism Education Council (ATEC) offers two levels of certification in this field: Special Events Co-ordinator and Special Events Manager.

Employment and Advancement

(section revised JANUARY 2006)

Special event co-ordinators may work on a short-term or permanent basis for:

- tourism associations
- trade and professional associations
- hotels
- festival and event associations
- municipal parks and recreation departments
- educational institutions

- large corporations
- convention and conference centres
- conference and event planning companies.

Those employed full-time may have other responsibilities as well. Advancement tends to take the form of being given responsibility for larger, more complex events or moving into supervisory positions. Experienced special event coordinators who have a broad range of contacts may establish their own companies.

Special event co-ordinators are part of the larger National Occupational Classification 1226: Conference and Event Planners. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Information, Culture and Recreation**
- **Public Administration**
- **Repair, Maintenance, Personal and Other Services**
- **Professional and Technical Services**
- **Management, Administrative and Other Support Services**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 1,100 Albertans are employed in the Conference and Event Planners occupational group which is expected to grow 1.1 to 2.1 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 10 to 30 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since special event co-ordinators form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for special event co-ordinators.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised SEPTEMBER 2005)

Salaries for special event co-ordinators vary considerably depending on the nature of the event, the qualifications of the co-ordinator and whether the position is full-time or contract.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Conference and Event Planners occupational group working part-time or full-time earned from **$21,000 to $74,000 a year.** The average salary was **$34,900 a year.**

Other Sources of Information

(section revised OCTOBER 2005)

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Tourism Education Council (ATEC) website: www.atec.ca

Related Occupational Profiles

Banquet Manager
Caterer
Fundraiser
Home Economist
Human Ecologist
Volunteer Manager

Related High School Subjects

Communication Technology; Financial Management; Language Arts; Logistics; Management and Marketing; Mathematics; Social Studies; and Tourism Studies

Related Post-Secondary Fields of Study

Communications

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Special Needs Teacher

Produced JANUARY 2006

Special needs teachers work primarily with children who require special instructional services to help them learn and develop to their potential.

NOC Number(s): 4142
Minimum Education: 4 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **S I D**

Duties

Special needs teachers spend most of their working day providing instruction and dealing with unexpected as well as routine situations. They work with children who have:

- physical or developmental disabilities
- hearing, visual, speech or language disabilities
- learning disabilities
- behaviour disorders or mental illness
- high intelligence or talent.

Special needs teachers must understand the unique characteristics of each student and choose or develop appropriate instructional programs and methods. Teaching techniques and methods vary with the particular disability or special talent but, in general, special needs teachers:

- work closely with parents and professionals from community agencies
- perform diagnostic assessments to determine student strengths and areas of need
- develop educational goals, objectives and individualized program plans
- choose or develop specially-designed instructional methods and materials
- prepare and present lessons
- monitor student performance and assess each student's progress
- work with teaching assistants.

Their working environments and responsibilities may vary considerably. For example, special needs teachers may:

- teach all or most subjects for a class of children who have a variety of disabilities or a particular type of difficulty
- meet with students from regular school classrooms on an individual basis or in small groups, and work in co-operation with classroom teachers to help children who have mild learning disabilities, language deficiencies or academic deficiencies
- travel from school to school providing tutorial services for students who are hearing or vision impaired, and provide consultative services for classroom teachers
- work with therapists in special clinics which children visit for assessments, therapy or instruction
- work with other teachers to adapt educational programs for special needs students in regular classrooms.

Special needs teachers also may work in:

- special schools with many classes of disabled children
- hospitals for children with short and long-term disabilities or illnesses
- the homes of children who are homebound due to sickness, rehabilitation needs or severe physical handicap
- institutional schools for children who have neuropsychiatric, emotional or social disabilities.

Working Conditions

Working with special needs children requires considerable physical, mental and emotional energy. Other working conditions for special needs teachers vary depending on student needs, the type of facility and the philosophy of the facility. For example, some special needs teachers may lift over 25 kilograms when helping children move to and from wheelchairs.

Personal Characteristics

In addition to the qualities required by other teachers, special needs teachers must be able to:

- work closely and co-operatively with other teachers, parents and consultants
- maintain a positive attitude and focus on student capabilities, not limitations.

They should enjoy finding different ways to solve questions and present information, and organizing and co-ordinating the work of others.

Educational Requirements

Special needs teachers may need specific skills for working with children who have particular types of disabilities. For example, teachers of deaf and hard of hearing children must be able to use various sign languages, techniques and aids to communicate with their students.

In Alberta, special needs teachers generally have a bachelor of education (B.Ed.) degree with a specialization related to special education. The minimum qualification is a four year B.Ed. degree in elementary education, or a university degree in another area and a teaching certificate. For a list of Alberta post-secondary institutions that offer B.Ed. degree programs in elementary education, see the Elementary School Teacher occupational profile.

In Alberta, the following post-secondary institutions offer programs specifically related to special needs teaching:

- **Athabasca University**, the **University of Alberta**, the **University of Calgary** and the **University of Lethbridge** offer a one year (24 credit) University Diploma in Special/Inclusive Education program for teachers interested in the area of special needs. Learners can take distance education courses from Athabasca University and/or courses offered on campus at one of the other universities. The admission requirement is an Alberta professional teaching certificate or equivalent.
- The University of Alberta, University of Calgary and University of Lethbridge offer B.Ed. and master's degree programs in special/inclusive education.
- The University of Alberta and University of Calgary offer doctoral (PhD) programs in special education.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

Special needs teachers are employed in public and private schools, and in hospitals and other institutions. With experience and additional training, they may advance to positions in school administration or consulting services.

Special needs teachers are part of the much larger National Occupational Classification 4142: Elementary School and Kindergarten Teachers. In Alberta, people employed in this classification work in the **Educational Services** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Educational Services industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 28,000 Albertans are employed in the Elementary School and Kindergarten Teachers occupational group which is expected to grow 1.3 to 2.3 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 360 to 650 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since special needs teachers form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for special needs teachers.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Salaries vary from one school board to another because wages and benefits are determined by collective agreements between boards and their teachers. However, all teachers are paid according to a grid system based on the number of years of training and experience a teacher has.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Elementary School and Kindergarten Teachers occupational group working part-time or full-time earned from **$12,400 to $95,100 a year.** The average salary was **$62,200 a year.**

All teachers employed in Alberta's publicly supported schools are members of the Alberta Teachers' Association (ATA) and are automatically included under the Alberta Teachers' Pension Plans Act. Collective agreements negotiated by the ATA provide a range of benefits including:

- life and disability insurance
- extended health care coverage
- vision and dental insurance
- professional improvement leave.

Holidays and pensions are specified by provincial legislation. However, many teachers use the summer break period of July and August, Christmas and spring-break holidays for professional development and for fulfilling additional professional responsibilities.

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Teachers' Association (ATA) website: www.teachers.ab.ca

Related Occupational Profiles

Career and Technology Studies Teacher
Educational Counsellor
Elementary School Teacher
Psychologist
Secondary School Teacher

Related High School Subjects

Communication Technology; Language Arts; Languages (other than English); Mathematics; Physical Education; Science; and Social Studies

Related Post-Secondary Fields of Study

Education and Library Studies

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Speech-Language Pathologist

Produced DECEMBER 2004

Speech-language pathologists work with children and adults to prevent, assess, diagnose and provide treatment and counselling for speech, language, voice and swallowing disorders.

NOC Number(s): 3141.2
Minimum Education: 6 years post-secondary education/training
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: M I S

Duties

Speech-language pathologists work with people ranging in age from infants to adults. They help clients restore/improve their ability to communicate or swallow properly. In general, this involves:

- using a variety of specialized tests and procedures to assess and identify language, speech, voice, resonance and swallowing disorders.
- developing and implementing treatment plans.
- providing consultative and intervention services.
- counselling clients and families regarding communication and swallowing disorders.
- designing and employing augmentative and alternative communication strategies and devices.
- consulting with others (e.g. educators) regarding speech and language stimulation, communication strategies, and teaching strategies for children who have communication disorders.
- consulting with and advising other health professionals.
- educating and supervising students, professionals and support personnel in a variety of work settings.
- working with multi-disciplinary teams to assess and treat clients.
- participating in research and public education activities.

Treatments for developmental or medical conditions may involve a variety of activities including one-to-one therapy, group therapy or consulting with parents and others. Treatment goals vary depending on the situation. For example, the goal may be to make a client's speech understandable, foster language development or restore language use after a stroke.

Speech-language pathologists may specialize in working with people who have a particular type of disorder (e.g. stuttering) or with a particular age group (e.g. pre-schoolers). They often work in teams which may include audiologists, physicians, psychologists, social workers, nurses, teachers, occupational therapists, physiotherapists, recreational therapists or speech-language pathology assistants.

Working Conditions

Speech-language pathologists generally work standard weekday office hours. They may be required to travel to a variety of locations (e.g. community health centres, day care centres, hospitals, nursing homes, rehabilitation centres, schools, clients' homes).

Personal Characteristics

Speech-language pathologists need the following characteristics:

- excellent communication and interpersonal skills
- the intellect and perseverance required to complete the training
- sensitivity to client needs
- creative problem solving skills
- the ability to set priorities and deal with multiple demands
- the ability to concentrate and pay close attention to details

- the ability to work effectively in a team environment.

They should enjoy working with people and their families and exploring problems in depth.

Educational Requirements

The education requirement for speech-language pathologists is a **master's degree in speech-language pathology**.

The **University of Alberta** in Edmonton offers two Master of Speech-Language Pathology (MSLP) degree programs: a non-thesis program and a thesis program. The non-thesis program is a 24 month, course based, clinical training program. The entrance requirement is a four year bachelor's degree in a discipline other than speech-language pathology with courses in linguistics and psychology and a grade point average (GPA) of at least 3.3/4 (or 7.5/9). Blocks of practical training and an internship in a school, rehabilitation centre or health care facility are required before graduation.

Universities and colleges throughout Alberta offer four year bachelor's degree programs that can provide suitable preparation for a master's degree program in speech-language pathology. Admission requirements vary from one post-secondary institution and program to another but generally include a high school diploma with an average of at least 60 per cent (sometimes 70 per cent) in English 30, Pure Math 30 or Math 30, Biology 30 and two other appropriate 30-level subjects.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Other Requirements

Under Alberta's Health Professions Act and Speech-Language Pathologists and Audiologists Profession Regulation, registration with the Alberta College of Speech-Language Pathologists and Audiologists (ACSLPA) is mandatory if you meet identified competency requirements and provide professional services directly to the public, teach the practice of speech-language pathology to others or supervise speech-language pathologists who provide professional services to the public. Only registered members may call themselves Speech-Language Pathologists.

Employment and Advancement

(section revised JANUARY 2006)

Most speech-language pathologists are employed as clinicians by:

- private practice offices
- community health centres
- regional health authorities
- schools.

Some are employed:

- as researchers in hospitals, universites and government agencies (PhD usually required)
- as administrators of speech and hearing programs.

Private practice fees are not covered by Alberta Health Care Insurance but many private insurance plans as well as other sources of government funding cover some services.

Speech-language pathologists are part of the larger National Occupational Classification 3141: Audiologists and Speech-Language Pathologists. In Alberta, people employed in this classification work in the following industries:

- **Health Care and Social Assistance**
- **Educational Services**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 900 Albertans are employed in the Audiologists and Speech-Language Pathologists occupational group which is expected to grow 3.0 to 4.0 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 20 to 40 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since speech-language pathologists form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for speech-language pathologists.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Audiologists and Speech-Language Pathologists occupational group working part-time or full-time earned from **$15,300 to $70,100 a year.** The average salary was **$60,400 a year.**

For information about current collective agreements in the public and not-for-profit sectors, see the Health Sciences Association of Alberta (HSAA) website.

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Canadian Association of Speech-Language Pathologists and Audiologists (CASLPA) website: www.caslpa.ca

Alberta College of Speech-Language Pathologists and Audiologists (ACSLPA) website: www.acslpa.ab.ca

Health Sciences Association of Alberta (HSAA) website: www.hsaa.ca

Related Occupational Profiles

Audiologist
Linguist
Speech-Language Pathologist Assistant

Related High School Subjects

Community Health; Language Arts; Languages (other than English); Mathematics; and Science (Biology)

Related Post-Secondary Fields of Study

Health Care and Medical Sciences

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.als.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Speech-Language Pathologist Assistant

Produced DECEMBER 2004

Speech-language pathologist assistants carry out treatment programs that are planned, directed and supervised by speech-language pathologists to improve client communication skills.

NOC Number(s): 3235.3
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: M S O

Duties

Speech-language pathologist assistants work with people of all ages and in a variety of settings. Their duties therefore vary from one position to another but, in general, they:

- conduct articulation and language therapy activities that are based on goals and treatment plans developed by speech-language pathologists for individual clients or groups
- conduct hearing screenings
- work directly with clients as assigned by a speech-language pathologist
- make materials used in therapy (e.g. communication boards)
- prepare activities (e.g. gather picture cards, workbooks, games)
- assist with scheduling and room set-up for assessments
- keep records about client progress and performance during therapy sessions
- compile statistics about daily activities
- perform clerical tasks such as filing, photocopying, laminating and computer support
- order, maintain and inventory supplies and equipment
- regularly meet with their supervising speech-language pathologists.

Working Conditions

Speech-language pathologist assistants usually work standard weekday hours, often in school settings. They may be required to travel to various locations including day care centres and hospitals.

Personal Characteristics

Speech-language pathologist assistants need the following characteristics:

- good observation skills
- good organizational and time management skills
- flexibility and adaptability
- good interpersonal skills
- strong oral and written communication skills
- patience
- creativity
- ability to take direction and follow treatment programs set out by speech-language pathologists
- ability to work effectively as part of a team.

They should enjoy taking a methodical approach to compiling information about client progress, instructing clients about ways to improve communication skills, and handling the equipment and materials used in therapy.

Educational Requirements

(section revised APRIL 2005)

Some speech-language pathologist assistants have been trained on the job but employers generally prefer to hire applicants who have a Speech-Language Pathologist Assistant diploma or an equivalent combination of education and experience (e.g. experience working with people who have disabilities). Proficiency in one or more languages other than English is an asset.

In Alberta, the following institutions offer therapist assistant programs in which students may train to become speech-language pathologist assistants:

- **Grant MacEwan College** in Edmonton offers a two year Therapist Assistant diploma program. Applicants must have 65 per cent in English 30, Social Studies 30 and three other Grade 12 subjects.
- **Medicine Hat College** offers a two year Speech Language Pathologist Assistant diploma program onsite and by distance education. Applicants must have a high school diploma or equivalent with at least 60 per cent in English 30, Biology 30 and two other 30 or 33-level subjects, one of which must be a 30-level Science or Math.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

(section revised JANUARY 2006)

Speech-language pathologist assistants are employed in:

- schools, day care centres and preschool programs
- regional and community health centres, long term care facilities, hospitals and rehabilitation centres
- the private practices of speech-language pathologists.

Without further education, advancement opportunities are limited.

Speech-language pathologist assistants are part of the larger National Occupational Classification 3235: Other Technical Occupations in Therapy and Assessment. In Alberta, most people employed in this classification work in the **Health Care and Social Assistance** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Health Care and Social Assistance industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 1,900 Albertans are employed in the Other Technical Occupations in Therapy and Assessment occupational group which is expected to grow 1.8 to 2.8 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 30 to 60 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since speech-language pathologist assistants form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for speech-language pathologist assistants.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Hourly wages for speech-language pathologist assistants range from **$12 to $20 an hour (2004 estimate)**.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Other Technical Occupations in Therapy and Assessment occupational group working part-time or full-time earned from **$11,900 to $85,100 a year.** The average salary was **$30,600 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Canadian Association of Speech-Language Pathologists and Audiologists (CASLPA) website: www.caslpa.ca

Alberta College of Speech-Language Pathologists and Audiologists (ACSLPA) website: www.acslpa.ab.ca

Communicative Disorders Assistant Association of Canada (CDAAC) website: www.cdaac.ca

Health Sciences Association of Alberta (HSAA) website: www.hsaa.ca

Therapist Assistant Association of Alberta (TAAA) website: www.thaaa.ca

Related Occupational Profiles

Dental Assistant
Educational Assistant
Hearing Aid Practitioner
Occupational Therapist Assistant
Ophthalmic Assistant
Physical Therapy Assistant
Speech-Language Pathologist

Related High School Subjects

Community Health; Information Processing; Language Arts; Languages (other than English); Mathematics; and Science (Biology)

Related Post-Secondary Fields of Study

Health Care and Medical Sciences

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Sport Medicine Physician

Produced DECEMBER 2004

Sport medicine physicians are medical doctors who specialize in the prevention, recognition, diagnosis and treatment of injuries and diseases related to sports activities.

NOC Number(s): 3112
Minimum Education: 8 + years post-secondary education/training
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: **I S D**

Duties

Most sport medicine physicians are orthopedic surgeons, emergency surgeons or family medicine practitioners who have a particular interest and training in the treatment and prevention of sports-related injuries and disorders.

Sport medicine physicians work as part of a team with other health professionals including exercise physiologists, nutritionists, athletic therapists and physical therapists. In general, sport medicine physicians:

- examine and evaluate athletes prior to their participation in sport activities to determine level of fitness and any predisposition to injury
- observe and evaluate the emotional well-being of athletes especially young players who may be under pressure from parents or others
- assist coaches and therapists to select and fit protective equipment
- work with therapists and coaches regarding the proper use of exercises and physiotherapeutic techniques, and advise them against practices that may be dangerous to athletes
- examine, evaluate and treat athletes who have been injured or who have medical problems such as exercise-induced asthma
- order diagnostic procedures such as x-rays and laboratory tests
- prevent injured athletes from returning to the game/competition if resuming could injure them further
- supervise the rehabilitation and return to activity of injured athletes
- attend games and international competitions.

Sport medicine physicians also may conduct research in the prevention and treatment of conditions related to sports and exercise.

Working Conditions

Sport medicine physicians work regular hours in clinics and hospitals but also are on call in case of emergencies. Many sport medicine physicians attend practices and competitions and travel to attend out-of-town competitions.

Personal Characteristics

Sport medicine physicians need the following characteristics:

- the intellectual ability required to successfully complete the required academic training and keep up to date with new developments in medicine
- a keen interest in sports and fitness
- the ability to put the needs of the athlete ahead of the needs of a team when necessary
- good communication skills.

They should enjoy finding solutions to problems, dealing with people and directing the work of others.

Educational Requirements

Sport medicine is not recognized as a medical specialty in Canada. The **Canadian Academy of Sport Medicine (CASM)** is working toward having the occupation recognized as a separate health discipline but that recognition is probably several years away.

Anyone practising as a sport medicine physician must be licensed by the College of Physicians and Surgeons of Alberta as a family physician or a specialist physician, and have a Diploma in Sport Medicine from CASM. Licensing requires graduation from a Medical Doctor (MD) program at a recognized university followed by residency training. In Canada, most sport medicine physicians complete a fellowship program in sport medicine after their residency.

In Alberta, MD programs are offered by the following institutions:

- The **University of Alberta** in Edmonton. The entrance requirement is satisfactory completion of at least two years of university studies with courses in organic and inorganic chemistry, English, physics, biology and statistics.
- The **University of Calgary**. The entrance requirement is completion of at least three years of recommended Arts and Sciences courses at a recognized post-secondary institution.

Because these are quota programs, many applicants who fulfill the entrance requirements cannot be accepted. Successful applicants are selected on the basis of:

- academic grades
- non-academic criteria such as letters of recommendation, resume, and personal interviews
- the results of a Medical College Admission Test (MCAT).

The required university courses may be taken entirely at the University of Calgary or the University of Alberta or, in part, at other post-secondary institutions.

Post-secondary institutions across Alberta offer university transfer programs that allow students to apply up to two years of study toward university bachelor's degree programs. It is the student's responsibility to ensure that the courses they choose to take will be accepted for credit at the institution to which they wish to transfer. When planning their university studies, prospective students should contact both Faculty of Medicines' admissions offices to ensure that they acquire all of the necessary prerequisites.

In general, the admission requirement for university and university transfer programs is a high school diploma or equivalent with a specified minimum average (ranging from 60 to 70 per cent depending on the program) in English 30, Pure Math 30 and three other appropriate Grade 12 subjects (usually Biology 30, Physics 30 and Chemistry 30).

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

After completing the MD program, family physicians must complete at least two years of residency training. Orthopedic surgeons take at least five years of residency training.

Other Requirements

Under Alberta's Medical Profession Act, you must be a registered member of the College of Physicians and Surgeons of Alberta (CPSA) to practice medicine in Alberta.

Employment and Advancement

(section revised JANUARY 2006)

Most sport medicine physicians work in private practice or sport medicine clinics. They may be employed or contracted by athletic teams and organizations, or volunteer their services.

The movement toward making sport medicine a recognized branch of medicine is being fuelled by new discoveries about conditioning, nutrition, the effects of drugs and how the human body performs under stress. This trend is expected to create employment opportunities for sport medicine physicians in more diverse settings such as occupational health, community health and the military.

Sports medicine physicians are part of the larger National Occupational Classification 3112: General Practitioners and Family Physicians. In Alberta, people employed in this classification work in the **Health Care and Social Assistance** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Health Care and Social Assistance industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation**.

Over 5,150 Albertans are employed in the General Practitioners and Family Physicians occupational group which is expected to grow 3.5 to 4.5 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 180 to 240 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since sport medicine physicians form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for sport medicine physicians.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Incomes for sport medicine physicians vary depending on location, specialty and years of practice.

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Canadian Academy of Sports Medicine (CASM) website: www.casm-acms.org

Canadian Association of Physical Medicine and Rehabilitation (CAPMR) website: capmr.medical.org

Canadian Orthopaedic Association (COA) website: www.coa-aco.org

Related Occupational Profiles

Athletic Therapist
Kinesiologist
Naturopathic Doctor
Pediatrician
Physician
Physiotherapist

Related High School Subjects

Community Health; Language Arts; Mathematics; Physical Education; and Science (Biology; Chemistry; and Physics)

Related Post-Secondary Fields of Study

Health Care and Medical Sciences

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Sports Instructor

Produced MARCH 2005

Sports instructors teach the basics of a particular sport (e.g. skiing, swimming, baseball) to beginners and recreational athletes, or help experienced athletes further develop their skills.

NOC Number(s): 5254
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: **M S i**

Duties

People who teach the general public or recreational athletes are usually called instructors, and those who teach competitive athletes are called coaches. In some sports, however, there is no distinction between instructor and coach. For information about coaching, see the Coach occupational profile.

Sports instructors teach participants individually or in groups the basic stances, movements, techniques, rules, regulations and safety precautions in a sport. Their duties vary greatly depending on the type of sport and the skill level of the participants. In general, however, sports instructors:

- demonstrate correct techniques, procedures, use of equipment and exercises to enhance students' abilities
- teach the basic rules and strategies of the game or sport
- demonstrate and teach appropriate personal safety skills
- assess students' levels of ability
- ensure the safety of participants
- demonstrate the proper use of equipment
- build confidence in students
- evaluate student progress and assign grades where appropriate
- organize events in which students may demonstrate their abilities
- maintain sports equipment
- counsel students regarding nutrition and lifestyle
- provide firsta aid when required.

Sports instructors also may:

- advise students regarding equipment and clothing
- sell clothing and equipment at clubs or resorts
- participate in sport demonstrations or competitions.

Working Conditions

Depending on the sport, sports instructors may work indoors in community facilities or clubs (e.g. gymnastics or swimming) or outdoors (e.g. skiing). Some work both indoors and outdoors, teaching and demonstrating techniques indoors and supervising student practice outdoors.

Some sports instructors work full-time but most work part-time, seasonally or mainly on weekends and evenings. The number of hours they work sometimes depends on the reputation and ability of the instructor, ranging from two to twenty or more hours a week. In some sports, instructors may be required to lift items weighing up to or over 25 kilograms. Instructors who suffer injuries may no longer be able to work in this occupation.

Personal Characteristics

Sports instructors need the following characteristics:

- physically fit
- patient
- enthusiastic
- responsible
- organized
- very good communicator
- able to work with and relate to people of all ages
- good leader and motivator.

They should enjoy having clear rules and organized methods, dealing with people and designing new programs.

Educational Requirements

Sports instructors must be proficient in relevant sport skills. Many have reached competitive levels in their sport. It is recommended that all instructors be trained in First Aid and have current CPR training. A background in physical education or experience in teaching is an asset.

Some sports require instructors to have reached a high level of proficiency in the sport, and to be certified through the National Coaching Certification Program (NCCP). For more information, see the Coach occupational profile.

Sports associations usually have a certification process for those wanting to teach. For example:

- **ski instructors** are certified through the **Canadian Ski Instructors' Alliance (CSIA).** There are four levels of certification.
- **swim instructors** must be certified as Water Safety Instructors by the Red Cross or as Swimming and Lifesaving Instructors by the **Lifesaving Society**. The Swimming and Lifesaving Instructor Award allows individuals to teach the Swimming, Water Rescue and Lifesaving courses of the Canadian Lifesaving Program.
- **tennis instructors** can progress through several levels of **Tennis Canada** certification as coaches or club professionals.

Employment and Advancement

(section revised JANUARY 2006)

Sports instructors are employed by:

- provincial sports associations
- community leagues
- YMCAs and YWCAs
- health clubs
- resorts
- camps
- private clubs
- parks and recreational facilities (e.g. swimming pools)
- private businesses
- continuing education departments of local schools
- university and college athletic departments.

Most sports instructors work part-time. Some jobs are seasonal.

Sports instructors can become coaches, trainers or athletic managers. Swimming instructors may become lifeguards. Some sports instructors are also recreational facility operators.

Sports instructors are part of the larger National Occupational Classification 5254: Program Leaders and Instructors in Recreation and Sport. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Information, Culture and Recreation**
- **Educational Services**
- **Public Administration**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 7,400 Albertans are employed in the Program Leaders and Instructors in Recreation and Sport occupational group which is expected to grow 2.5 to 3.5 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 180 to 260 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since sports instructors form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for sports instructors.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Some sports instructors are volunteers. Those who are paid may charge by the class or by the hour. Fees/wages vary depending on the sport.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Program Leaders and Instructors in Recreation and Sport occupational group working part-time or full-time earned from **$9,800 to $61,400 a year.** The average salary was **$26,000 a year.**

Other Sources of Information

Alberta Sport Recreation Parks and Wildlife Foundation website: www.cd.gov.ab.ca/asrpwf/

Canadian Ski Instructors' Alliance (CSIA) website: www.snowpro.com

Lifesaving Society website: www.lifesaving.org

Tennis Alberta website: www.tennisalberta.com

Related Occupational Profiles

Fitness Instructor
Golf Professional
Recreation and Sport Administrator
Recreation Co-ordinator/Supervisor

Related High School Subjects

Community Health; Enterprise and Innovation; Foods; Language Arts; Management and Marketing; Physical Education; Science; and Tourism Studies

Related Post-Secondary Fields of Study

Physical Education and Recreation

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Sports Official

Produced MARCH 2005

Sports officials ensure that established rules and regulations are observed at sporting events (games or competitions).

NOC Number(s): 5253
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **M D s**

Duties

Sports officials are responsible for maintaining standards of play and enforcing the rules and regulations that govern their sport (e.g. football, hockey, curling, baseball, figure skating, ski jumping). In general, sports officials:

- ensure safe playing conditions
- keep track of playing time and elapsed time, and start and stop play when required
- award points
- assess and enforce penalties when necessary
- establish and maintain rapport with coaches, players and organizing committees.

Depending on the sport, they also may:

- keep track of the score and other athletic records
- judge performance and determine results
- verify calculations before medal presentations
- respond to written protests
- verify competitors' credentials
- check that equipment follows guidelines for the sport.

In some sports, officials use hand signals to communicate their decisions.

Working Conditions

Officiating is often strenuous work that demands close attention to detail and involves a great deal of pressure and concentration. Evening and weekend work is common. Travel is often required.

Depending on the sport, officials may be required to work indoors or outdoors. In some sports, officials may routinely lift heavy items or wear protective gear to avoid getting hurt during games.

Personal Characteristics

Sports officials need the following characteristics:

- a genuine interest in the sport
- the ability to make quick, fair, correct judgements
- confidence
- good communication and interpersonal skills
- a good memory for details
- the ability to see well
- the ability to remain alert and focused on the competition
- the ability to remain calm under pressure and maintain control
- the ability to ask for feedback and accept criticism.

They should enjoy having clear rules and guidelines for their work, analyzing and directing the performance of others, and dealing with people.

Educational Requirements

Sports officials must have extensive knowledge of their sport and its rules, and be **certified and registered** with the governing body or commission responsible for the sport.

- **Baseball umpires** must be trained through the National Umpire Certification Program administered in Alberta by Baseball Alberta. The first of five levels of certification is required to umpire Regional Minor Baseball games. Level 5 is required for Olympic level games.
- **Curling officials** have four levels of certification. Level III (district association and provincial playdowns) and Level IV (national championships) officials are appointed by the Canadian Curling Association.
- **Figure skating evaluators** must be members of the Canadian Figure Skating Association. Officials' qualifications can vary but, in general, they must maintain amateur status and not receive financial compensation for judging.
- **Football officials** are members of local associations that are members of Football Alberta. New members work under the direction of qualified officials and participate in various training seminars. The Canadian Football League (CFL) requires its officials to have at least eight to twelve years of experience officiating amateur football games.
- **Hockey officials** also begin in provincial amateur leagues. Officials work their way through the six levels of the Canadian Hockey Officiation program to become senior officials. Advancement through these levels is based on ability and experience as evaluated by the executive of the local association.
- **Ski jumping officials** must be members of the Ski Jumping Canada. They must pass different examinations to work at divisional, national and international levels.
- **Swim officials** are volunteers certified by Swim Alberta. There are five levels of certification.
- **Volleyball officials** are governed by Volleyball Canada, and provincial and zone associations. Officials may be certified at the local, provincial, regional, national or international level.

Requirements for other officials vary greatly from sport to sport. For specific information, contact the governing body for the sport or the official body representing the sport.

Employment and Advancement

(section revised JANUARY 2006)

Employment opportunities for sports officials at the professional level are limited. Most officials in amateur sports are volunteers or are paid per game. They officiate as a hobby or to supplement income from other sources.

- Amateur **baseball umpires** may be recommended by the National Umpire Certification Program for part-time or fill-in positions for professional and semi-professional games in Alberta.
- After they gain experience and expertise, **football officials** are assigned to officiate at more advanced levels (e.g. college or university games). For the most part, these assignments are given only to officials who have extensive experience and knowledge of the rules of football. Amateur officials who have several years of experience are recommended by local amateur associations to the Canadian Football League (CFL) for consideration. A very small number are invited by the CFL to attend the training program held prior to each football season.
- **Hockey officials** can progress from officiating minor hockey to the Western Hockey League. National Hockey League (NHL) officials are recruited from the Western Hockey League. An average of one official per year is selected for full-time employment in the NHL.
- **Ski jumping officials** at the divisional level may progress to national and international levels.
- All five levels of **swim officials** are volunteers.

Sports officials are part of the larger National Occupational Classification 5253: Sports Officials and Referees. In Alberta, most people employed in this classification work in the **Information, Culture and Recreation** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Information, Culture and Recreation industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 750 Albertans are employed in the Sports Officials and Referees occupational group which is expected to grow 1.5 to 2.5 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 10 to 20 **new** positions will be created each year **in addition** to job openings created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Most sports officials are paid a set fee per game. Fees vary from one sport to another and depend on the level of sport.

Other Sources of Information

Alberta Sport Recreation Parks and Wildlife Foundation website: www.cd.gov.ab.ca/asrpwf/

Baseball Alberta website: www.baseballalberta.com

Canadian Figure Skating Association websites: www.skatecanada.ca and www.patinagecanada.ca

Canadian Hockey Centre website: www.canadianhockey.ca

Football Alberta website: www.footballalberta.ab.ca

Ski Jumping Canada website: www.skijumpingcanada.com

Swim Alberta website: www.swimalberta.ca

Volleyball Canada website: www.volleyball.ca

Western Hockey League website: www.whl.ca

Related Occupational Profiles

Bylaw Enforcement Officer
Coach
Professional Athlete

Related High School Subjects

Language Arts; Management and Marketing; and Physical Education

Related Post-Secondary Fields of Study

Physical Education and Recreation

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Sprinkler Systems Installer

Apprenticeship and Industry Training

Produced FEBRUARY 2006

Sprinkler systems installers fabricate, install, test, maintain, inspect and repair sprinkler systems in industrial operations, department stores, office buildings, hotels, schools, hospitals and residences.

NOC Number(s): 7252.2
Minimum Education: Apprenticeship Trade - Grade 10
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: **O i m**

Duties

To install wet and dry pipe sprinkler systems, carbon dioxide, chemical and foam extinguishing systems, stand pipe and hose systems and fire pump systems, sprinkler system installers:

- read and interpret engineered drawings and specifications to determine layout requirements
- select the type and size of pipe required and arrange the piping to provide fire protection
- install clamps, brackets and hangers to support the piping system and sprinkler and fire protection equipment
- join and connect pipes and piping sections to related piping systems, tanks, mains, pumps, compressors and control equipment using various pipe joining methods
- test systems for leaks using air or water pressure
- inspect, maintain and repair piping, fixtures and controls including hydrant, pump and sprinkler head connections
- may prepare cost estimates for clients.

Working Conditions

Sprinkler systems installers work primarily indoors, often in temporarily heated or unheated spaces. They work a standard 40-hour week but occasionally work overtime to meet construction deadlines. There can be some risk of injury when working on construction sites.

Sprinkler system installers may be required to lift items weighing up to 25 kilograms.

Personal Characteristics

Sprinkler systems installers need the following characteristics:

- physical strength and stamina
- manual dexterity
- the ability to work in high places
- the ability to do precision work.

They should enjoy working with little direction or supervision.

Educational Requirements

To work in Alberta, sprinkler systems installers must be ONE of the following:

- registered apprentices
- certified journeymen
- working for an employer who is satisfied that they have the skills and knowledge expected of certified journeymen
- self-employed.

To **register** with **Alberta Apprenticeship and Industry Training**, apprentices must:

- have at least an Alberta Grade 10 education (or equivalent) or pass an entrance exam
- find a suitable employer who is willing to hire and train an apprentice. Most employers prefer to hire high school graduates and may select apprentices from among their current employees. Good marks in applied math and physics, English (particularly reading comprehension), drafting and industrial arts are particularly important.

The **term of apprenticeship** four years (four 12-month periods) that include a minimum of 1,600 hours of on-the-job training and seven weeks of technical training in each of the first three years and a minimum of 1,800 hours of on-the-job training in the fourth. High school students can become apprentices and gain credits toward apprenticeship training and a high school diploma at the same time through the Registered Apprenticeship Program (RAP).

Applicants who have related training or work experience may be eligible for credit or certification.

Sprinkler systems installer apprentices may attempt the Interprovincial Exam in the final period of their apprenticeship training and, if successful, are granted a Red Seal (which is recognized in most parts of Canada).

Technical training is arranged by Alberta Apprenticeship and Industry Training and is currently offered at Red Deer College.

Pre-employment programs for prospective apprentices and continuing education programs for journeymen may be offered on an as needed basis by the institution(s) listed above or other schools.

Employment and Advancement

Sprinkler systems installers are employed in the construction industry.

Experienced sprinkler systems installers may advance to supervisory positions or start their own businesses. Alberta certified journeyman sprinkler systems installers who have the supervisory or management skills required by industry may apply for an Achievement in Business Competencies Blue Seal by contacting Alberta Apprenticeship and Industry Training.

Sprinkler systems installers are part of the larger National Occupational Classification 7252: Steamfitters, Pipefitters and Sprinkler Systems Installers. In Alberta, most people employed in the classification work in the following industries:

- **Construction**
- **Oil and Gas Extraction**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- time of year (for seasonal jobs)
- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 4,100 Albertans are employed in the Steamfitters, Pipefitters and Sprinkler Systems Installers occupational group which is expected to grow 2.5 to 3.5 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 100 to 150 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since sprinkler systems installers form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for sprinkler systems installers.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Apprentice sprinkler system installers earn at least 45 per cent of the journeyman wage rate in their place of employment in the first year, 60 per cent in the second, 70 per cent in the third and 80 per cent in the fourth. According to the Alberta Provincial Apprenticeship Committee for this trade, journeyman wage rates vary, but generally range from **$25 to $35 an hour plus benefits** (2005 estimate).

According to the **2005 Alberta Wage and Salary Survey**, part-time or full-time starting salaries for Albertans working in the Steamfitters, Pipefitters and Sprinkler System Installers occupational group ranged from **$28,300 to $73,100 a year.** The average salary was **$44,900 a year**.

Other Sources of Information

Alberta Apprenticeship and Industry Training website: www.tradesecrets.org

Alberta Construction Industry "Trade Up!" website: www.careersconstruction.com

Calgary Construction Association website: www.cca.cc

Construction Sector Council website: www.csc-ca.org

Related Occupational Profiles

Gasfitter
Instrument Technician
Plumber
Refrigeration and Air Conditioning Mechanic
Steamfitter-Pipefitter

Related High School Subjects

Construction Technologies; Design Studies; Fabrication Studies; Language Arts; Mathematics; Physical Education; and Science (Physics)

Related Post-Secondary Fields of Study

Trades, Industrial and Related Training

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Stage Manager

Produced JUNE 2002

Stage managers co-ordinate everything that happens during a stage performance: actors' movements and lines, props, scenery movements, lighting effects and sound effects. During rehearsals, stage managers co-ordinate schedules for the artistic and technical operation of the production.

NOC Number(s): 5226.7
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **D M O**

Duties

From the beginning to the end of a theatre production, stage managers co-ordinate much of what the audience sees on stage. In general, they:

- do a script analysis that outlines the scenes, number of characters and who plays them, props required, costume changes, scene changes and technical requirements
- meet with the director, production manager and designer before rehearsals start to discuss production needs
- contact actors by telephone to tell them when and where to report for rehearsals
- attend rehearsals to document the artistic process and co-ordinate daily activities
- communicate daily with technical departments and management regarding rehearsal progress and requirements
- act as a liaison between actors and theatre management, together with an Actors' Equity deputy (an elected member of the acting company, in companies in Equity's jurisdiction).

During rehearsals, stage managers:

- ensure that regulations for breaks and overtime are observed
- make sure all safety regulations backstage are strictly enforced
- prepare a "prompt book" or written record of actors' cues, blocking, placement of props, and sound and lighting cues
- orchestrate a smooth-running production with the director, designer, actors and technicians.

On opening night, the director hands the production of the show over to the stage manager. The stage manager is then completely responsible for the production and for maintaining the artistic and technical intentions of the director and designer(s).

During performances, stage managers:

- ensure the readiness of both the cast and crew and the physical aspects of the production
- cue the light, stage and sound technicians as well as any other special effects personnel
- continue to communicate with theatre staff after the opening to keep them informed about the status of the production
- may call rehearsals during long performance runs.

In amateur or community theatre groups and some smaller professional theatres, stage managers may also help build and paint the set, operate lighting or audio during the performance or be responsible for finding people to help "strike" the set and store the lights, set, costumes and props. In larger theatres, stage managers usually have one or more assistants.

Working Conditions

Stage managers work long, irregular hours and must be prepared to work through weekends and holidays. Most productions are held during the evenings with rehearsals during the day. If the stage production is touring, the stage manager is expected to travel with the show.

Personal Characteristics

Stage managers must be able to:

- work under pressure (which builds toward opening night) and meet deadlines
- support and sometimes push others to keep to the production schedule
- adapt to the needs and sometimes difficult temperaments of actors
- remain calm, focussed, efficient and diplomatic at all times
- communicate clearly, orally and in writing
- work on several projects simultaneously
- organize their own work and that of others.

They should enjoy taking a methodical approach to their work, taking charge and controlling situations and negotiating with people.

Educational Requirements

(section revised JUNE 2005)

Stage management requires both people skills and technical skills. The technical aspects can be learned by working in the theatre or through formal training. Many stage managers take a related post-secondary education program, then participate in an apprenticeship program administered by Actors' Equity.

In Alberta, the following institutions offer related post-secondary programs:

- **Grant MacEwan College** in Edmonton offers a two year Theatre Production diploma program. The entrance requirement is a high school diploma with English 30 (or at least 75 per cent in English 33).
- **Mount Royal College** in Calgary offers a two year Theatre Arts diploma in techical theatre. The entrance requirement is a high school diploma or equivalent. An interview is required.
- **Red Deer College** offers a two year Theatre Studies diploma program with a specialization in theatre technology and management. The entrance requirement is a high school diploma or equivalent with English 30 or 33 plus an interview and audition.
- The **University of Alberta** in Edmonton offers a four year Bachelor of Fine Arts (BFA) degree program in Technical Theatre. English 30-1 and four of Biology 30, Chemistry 30, Pure Mathematics 30, Mathematics 31, Physics 30, Social 30, 30-level languages other than English, Fine Arts Subject (only one). Contact the faculty or department for specific academic and other requirements.
- The **University of Lethbridge** offers post-diploma and degree programs in drama with a technical/design major. The entrance requirement is an average of at least 60 per cent in English 30, three other appropriate 30-level subjects and a fifth Grade 12 subject.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

During the summer months, the **Banff Centre for the Arts** offers courses in Stagecraft for people who have some post-secondary education in Theatre Production. The Centre also offers Theatre Production Residencies in stage management. Applicants must submit a resume of related training and experience, and a statement of learning objectives.

Employment and Advancement

(section revised JANUARY 2006)

Stage managers work for:

- theatre companies
- dance and opera companies
- touring music events (concerts) and special events
- symphony orchestras
- television and radio stations and networks.

They may be hired for the run of one production or a season, and often accompany touring companies. Even large theatres may not hire stage managers year round.

Experienced stage managers may move into other positions in film and television production, arts administration, concert production or special event stage managing (e.g. at Olympics, festivals).

Stage managers are part of the larger National Occupational Classification 5226: Other Technical and Co-ordinating Occupations in Motion Pictures, Broadcasting and the Performing Arts. In Alberta, over 75 per cent of people employed in this classification work in the **Information, Culture and Recreation** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Information, Culture and Recreation industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

About 550 Albertans are employed in the Other Technical and Co-ordinating Occupations in Motion Pictures, Broadcasting and the Performing Arts occupational group which is expected to grow 1.0 to 2.0 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover. (**Note**: Since stage managers form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for stage managers.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Since stage managers are usually hired on contract, their annual incomes vary considerably from one person to another, and may vary from one year to another.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Other Technical and Co-ordinating Occupations in Motion Pictures, Broadcasting and the Performing Arts occupational group working part-time or full-time earned from **$14,600 to $66,400 a year.** The average salary was **$28,900 a year.**

Other Sources of Information

EDinfo website: www.alis.gov.ab.ca/edinfo

Canadian Actors' Equity Association (ACEA) website: www.caea.com

Related Occupational Profiles

Casting Director
Lighting Technician
Producer - Film, Radio, Television and Theatre
Set Designer
Theatre Director

Related High School Subjects

Construction Technologies; Design Studies; Electro-Technologies; Fine Arts (Drama); Information Processing; Language Arts; Logistics; and Management and Marketing

Related Post-Secondary Fields of Study

Fine Arts and Performing Arts

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Station Attendant/Ramp Service Agent

Produced OCTOBER 2003

Station attendants are employed at airports to operate ramp servicing vehicles and equipment, handle baggage and perform other duties on the ramp and in cargo warehouses.

NOC Number(s): 7437
Minimum Education: High school diploma
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **M O i**

Duties

Depending on the airline and size of the airport, station attendants may perform all or only some of the following duties:

- operate towing tractors, food service trucks, de-icer sprayers, lavatory servicing trucks, and other ramp servicing vehicles and equipment
- position passenger loading bridge and operate aircraft doors
- tow aircraft to gate position for loading or unloading
- refuel aircraft
- connect and operate ground support equipment such as ground power units and air conditioning units
- load and unload baggage and freight manually or by operating ramp equipment such as fork lifts, scissor lifts, conveyor belts and ramp tractors
- sort and route baggage, cargo and mail, and position cargo in warehouses
- load cargo in aircraft compactly and in compliance with weight restrictions to achieve proper load balance
- clean and stock aircraft cabins
- de-ice or wash aircraft
- load and position meals and related supplies during station stops.

Station attendants must observe safety precautions at all times around aircraft.

Working Conditions

Airlines operate 24 hours a day, so station attendants must work shifts with rotating days off. Most of the work is done outdoors in an environment that is often noisy. Heavy lifting (over 25 kilograms) is required.

Personal Characteristics

Station attendants need the following characteristics:

- able to lift heavy cargo
- good communication skills
- safety conscious
- able to work well under pressure.

They should enjoy having clear rules and organized methods, driving vehicles and operating equipment, and solving problems by experimenting.

Educational Requirements

Station attendants must qualify for a high level of security clearance. Most airline companies also require applicants to have a high school diploma or equivalent education, hold a valid driver's licence and be fluent in English. Fluency in French may be required for some positions and locations.

When there are a number of applicants for a station attendant position, airlines give preference to people who have an advanced driving certificate, heavy equipment training, additional education, previous airline experience, experience in physically demanding positions or experience in warehousing, stockrooms or shipping and receiving.

Station attendants are **trained on the job**. Some companies provide five or six weeks of training before assigning a new employee to a position.

Employment and Advancement

(section revised JANUARY 2005)

Station attendants are employed by airlines and airline subcontractors. Depending on company policy, they may be asked to transfer to other locations in Canada. Most entry level positions are part-time.

Station attendants who have the required qualifications may move into positions of greater responsibility or transfer to other positions such as passenger agent, cargo agent, baggage agent or load agent, or to administrative positions.

Station attendants are part of the larger National Occupational Classification 7437: Air Transport Ramp Attendants. In Alberta, most people employed in this classification work in the **Transportation and Warehousing** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Transportation and Warehousing industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 1,400 Albertans are employed in the Air Transport Ramp Attendants occupational group which is expected to grow 1.0 to 2.0 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 10 to 30 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since station attendants form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for station attendants.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Air Transport Ramp Attendants occupational group working part-time or full-time earned from **$17,800 to $51,500 a year.** The average salary was **$ 6,900 a year.**

Other Sources of Information

(section revised JUNE 2005)

Careers in Transportation website: www.transpocity.ca

International Association of Machinists and Aerospace Workers District 140 website: www.iam140.org

Related Occupational Profiles

Furniture Mover
Shipper and Receiver
Warehousing Professionals

Related High School Subjects

Language Arts; Languages (other than English); Logistics; and Physical Education

Related Post-Secondary Fields of Study

Driver Training; and Trades, Industrial and Related Training

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Statistician

Produced DECEMBER 2005

Statisticians plan, organize, analyze and interpret studies to provide usable information for a wide range of activities. For example, they may be involved in agricultural or health research, evaluating government programs, assessing environmental problems, improving manufacturing or business processes, or forecasting future economic conditions.

NOC Number(s): 2161.2
Minimum Education: 4 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **I M D**

Duties

Statisticians work in fields such as biological, environmental and agricultural science, business and finance, physical sciences and engineering, medical and social sciences. In any of these fields, they may:

- apply statistical theories and methods to solve problems
- develop statistical methodology
- research the mathematical basis of statistics.

In general, statisticians work with others to:

- design projects, experiments and other studies
- determine the most efficient methods of collecting and organizing numerical data
- conduct surveys or supervise those directly engaged in collecting data
- analyze, summarize, make inferences and interpret the information collected
- write reports and present findings in the form of tables and graphs.

In business and industry, corporations employ statisticians to work in market research, human resource forecasting, inventory control, cost analysis and process improvement. For example, statisticians in business and industry may design, conduct and interpret customer satisfaction surveys.

In government, statisticians work in program planning, technological research, policy analysis, operational research, agricultural research, urban planning, wildlife management, energy and resource management, labour and economic forecasting, and social research.

In research, statisticians work with other professionals to plan and conduct studies and experiments. For example, statisticians involved in medical research work with doctors to investigate the causes of disease, and assess new drugs and medical treatments.

Working Conditions

Statisticians work in an office environment. They usually work normal office hours but may work overtime to meet project deadlines. They often work on several different projects at the same time. Teamwork is often required but statisticians also may work alone.

Personal Characteristics

Statisticians need the following characteristics:

- an aptitude for and interest in mathematics
- an interest in the application of scientific principles to the solution of practical problems
- the ability to think logically, organize projects and carry them out
- the ability to work alone as well as with others
- the ability to pay careful attention to details
- the ability to write clear, concise reports in language appropriate for intended readers.

Statisticians should enjoy synthesizing data, applying statistical theories and methods, and working with others to understand and solve problems.

Educational Requirements

The minimum academic requirement is a bachelor's degree in statistics or mathematics but a graduate degree (master's or doctoral) is usually required for higher level positions. A doctoral degree (PhD) is required to conduct independent research.

In Alberta, the following post-secondary institutions offer degree programs in statistics.

- The **University of Alberta** in Edmonton offers a four year Bachelor of Science (B.Sc.) degree with honours or specialization in Statistics and Applied Probability. The entrance requirement is a competitive average (80 per cent for the honours program) in English Language Arts 30-1 or English 30; Pure Math 30 or Math 30; two of the following: Physics 30, Chemistry 30, Biology 30, Science 30, Math 31; and one other approved 30 level subject (Math 31 recommended). Students in the program may include an industrial internship. The University of Alberta also offers master's and doctoral degree programs in statistics.
- The **University of Calgary** offers four year general and five year co-operative education Bachelor of Arts (BA) and B.Sc. degree programs in Statistics. The entrance requirement is a high school diploma or equivalent with a competitive average in (a) English Language Arts 30-1 or English 30, (b) Pure Math 30 or Math 30, (c) two of the following: Biology 30, Chemistry 30, Physics 30, Math 31, (d) one of the following: Social Studies 30, a 30 level language other than English, Science 30, a five credit Grade 12 subject or a subject listed in (c). Math 31 is recommended. The University of Calgary also offers master's and doctoral degree programs in statistics.

For information about degree programs in mathematics, see the Mathematician occupational profile.

University transfer programs are offered by colleges and universities located throughout the province. It is the student's responsibility to ensure that the courses they choose to take will be accepted for credit by the university they wish to attend.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

(section revised JANUARY 2006)

Statisticians work for a variety of employers including:

- financial institutions
- Statistics Canada and other government departments
- medical and educational research agencies
- science and engineering consulting firms
- market research companies
- pharamceutical companies
- manufacturers and other companies requiring process improvement
- large scale manufacturing plants that require sophisticated maintenance programs
- universities.

Most jobs are located in major urban areas.

Outstanding individuals who have graduate degrees and many years of experience may move into management positions or private consulting work.

Statisticians are part of the larger National Occupational Classification 2161: Mathematicians, Statisticians and Actuaries. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Professional and Technical Services**
- **Public Administration**
- **Finance, Insurance and Real Estate**
- **Educational Services**
- **Food and Beverage Products Manufacturing**
- **Retail Trade**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta

- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 450 Albertans are employed in the Mathematicians, Statisticians and Actuaries occupational group which is expected to grow 1.5 to 2.5 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover. (**Note**: Since statisticians form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for statisticians.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

In 2003, Albertans in the Mathematicians, Statisticians and Actuaries occupational group earned earned an average salary of **$58,800 a year** (2003 Alberta Wage and Salary Survey).

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Statistical Society of Canada (SSC) website: www.ssc.ca

Related Occupational Profiles

Actuary
Demographer
Economist
Mathematician
Operations Research Analyst

Related High School Subjects

Information Processing; Language Arts; Management and Marketing; Mathematics; and Science (Biology; Chemistry; and Physics)

Related Post-Secondary Fields of Study

Business, Management and Administrative Studies; Engineering, Architecture and Related Studies; Environment, Forestry and Related Studies; Mathematics; Sciences; and Social Sciences, Law and Religious Studies

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For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Steamfitter-Pipefitter

Produced FEBRUARY 2006

Steamfitter-pipefitters lay out, assemble, fabricate, maintain and repair piping systems which carry water, steam, chemicals or fuel used in heating, cooling, lubricating and other processes.

NOC Number(s): 7252.1
Minimum Education: Apprenticeship Trade - Grade 10
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: **O i m**

Duties

Steamfitter-pipefitters who install a typical piping system in a commercial building or industrial plant:

- study blueprints, drawings and specifications to determine the type of pipe and tools to use and lay out the sequence of tasks
- make detailed sketches for pipe and equipment fabrication and installation (as required)
- measure, cut, thread, groove, bend, solder, assemble and install metal, plastic and fibreglass pipes, valves and fittings
- join pipe sections and related equipment and secure in position
- use testing equipment to check systems for leaks.

Steamfitter-pipefitters also remove and replace worn components and do general maintenance work. They may also work on plant shut-downs.

Working Conditions

Steamfitter-pipefitters work both indoors and outdoors at physically demanding tasks that often require climbing. The normal work week is 40-hours but overtime may be required to meet construction deadlines. Construction contractors usually require employees to travel and live in rented accommodation or company "on-site" camps. There is some risk of injury when working with power tools and heavy equipment.

Steamfitter-pipefitters may be required to lift items weighing over 25 kilograms.

Personal Characteristics

Steamfitter-pipefitters need the following characteristics:

- physical strength and stamina
- manual dexterity
- mechanical aptitude
- the ability to read and understand complex instructions
- the ability to do careful and precise work.

They should enjoy working with little direction or supervision.

Educational Requirements

To work in Alberta, steamfitter-pipefitters must be registered apprentices or certified journeymen.

To **register** with **Alberta Apprenticeship and Industry Training**, apprentices must:

- have at least an Alberta Grade 10 education with 65 per cent in Math 10 or 13, Pure Math 10 or Applied Math 10, Science 10, and English 13 (or equivalent) or pass an entrance exam
- find a suitable employer who is willing to hire and train an apprentice. Most employers prefer to hire high school graduates and may select apprentices from among their current employees.

The **term of apprenticeship** is four years (four 12-month periods) that include a minimum of 1,500 hours of on-the-job training and eight weeks of technical training each year. High school students can become apprentices and gain credits toward apprenticeship training and a high school diploma at the same time through the Registered Apprenticeship Program (RAP).

Applicants who have related training or work experience may be eligible for credit or certification.

Steamfitter-pipefitter apprentices may attempt the Interprovincial Exam in the final period of their apprenticeship training and, if successful, are granted a Red Seal (which is recognized in most parts of Canada).

Technical training is arranged by Alberta Apprenticeship and Industry Training and is currently offered at:

- Keyano College in Fort McMurray by mobile delivery at the Suncor site.
- Medicine Hat College
- the Northern Alberta Institute of Technology (NAIT) in Edmonton and Fairview
- Portage College in Lac La Biche
- Red Deer College
- the Southern Alberta Institute of Technology (SAIT) in Calgary.

Pre-employment programs for prospective apprentices and continuing education programs for journeymen may be offered on an as needed basis by the institution(s) listed above or other schools.

Employment and Advancement

Steamfitter-pipefitters are employed by pipeline construction contractors and sub-contractors, thermal or steam generating plants, manufacturers, utility companies, oil refineries, gas plants, pulpmills and chemical plants.

Experienced steamfitter-pipefitters may advance to supervisory positions such as foreman, sub-contractor, contractor or construction superintendent. Alberta certified journeyman steamfitter-pipefitters who have the supervisory or management skills required by industry may apply for an Achievement in Business Competencies Blue Seal by contacting Alberta Apprenticeship and Industry Training.

Steamfitter-pipefitters are part of the larger National Occupational Classification 7252: Steamfitters, Pipefitters and Sprinkler Systems Installers. In Alberta, most people employed in the classification work in the following industries:

- **Construction**
- **Oil and Gas Extraction**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- time of year (for seasonal jobs)
- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 4,100 Albertans are employed in the Steamfitters, Pipefitters and Sprinkler Systems Installers occupational group which is expected to grow 2.5 to 3.5 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 100 to 150 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since steamfitter-pipefitters form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for steamfitter-pipefitters.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Apprentice steamfitter-pipefitters earn at least 50 per cent of the journeyman wage rate in their place of employment in the first year, 60 per cent in the second, 70 per cent in the third and 80 per cent in the fourth. According to the Alberta Provincial Apprenticeship Committee for this trade, journeyman wage rates vary, but generally range from **$24 to $30 an hour plus benefits** (2005 estimate).

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Steamfitters and Pipefitters occupational group working part-time or full-time earned from **$26,600 to $96,600 a year.** The average salary was **$55,600 a year.**

Other Sources of Information

Alberta Apprenticeship and Industry Training website: www.tradesecrets.org

Alberta Construction Industry "Trade Up!" website: www.careersconstruction.com

Calgary Construction Association website: www.cca.cc

Construction Sector Council website: www.csc-ca.org

Related Occupational Profiles

Gas Utility Operator
Gasfitter
Instrument Technician
Plumber
Refrigeration and Air Conditioning Mechanic
Safety Codes Officer
Sprinkler Systems Installer

Related High School Subjects

Construction Technologies; Design Studies; Energy and Mines; Fabrication Studies; Language Arts; Mathematics; Physical Education; and Science (Physics)

Related Post-Secondary Fields of Study

Trades, Industrial and Related Training

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Steel Detailer

Apprenticeship and Industry Training

Produced FEBRUARY 2006

Steel detailers are specialized drafters who produce detailed shop, fabrication and installation drawings.

NOC Number(s): 2253.1, 2253.2
Minimum Education: Designated Occupation
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **M I O; M I O**

Duties

Engineering or design drawings may lack the level of detail steel fabricators, ironworkers or welders require to manufacture or assemble the girders, beams, columns, stairways and other steel components of buildings and structures. Steel detailers define fabrication requirements by:

- interpreting drawings, blueprints, specifications and the instructions of engineers and architects
- applying industry and government codes
- developing shop drawings, installation drawing specifications, and related instructions.

Senior steel detailers may also be involved in shop and site work, quality control and project supervision.

Working Conditions

Steel detailers usually work in offices. They generally work standard office hours although overtime may be required to meet deadlines.

Personal Characteristics

Steel detailers need the following characteristics:

- the ability to work independently
- good written and verbal communication skills
- the ability to pay attention to detail
- the ability to do precision work
- the ability to visualize spatial relationships and translate abstract concepts into concrete drawings and specifications
- good problem-solving skills.

They should enjoy taking a methodical approach to their work, working in teams, analyzing data, finding innovative solutions to problems and working with precision equipment and instruments.

Educational Requirements

Steel detailer is a **designated occupation** in Alberta. This means that certification is not required but trainees can apply to **Alberta Apprenticeship and Industry Training** for a Level 1, 2, or 3 Alberta Occupational Certificate. Apprenticeship and Industry Training does not offer a training program for this occupation.

Applications for certification must include a Registrar's Letter from the Alberta Chapter of the National Institute of Steel Detailers (NISD) confirming which level of examination they may attempt, or a related occupation certificate earned from another apprenticeship jurisdiction.

On-the-job and technical training for steel detailers may be provided by the **Alberta Chapter of the National Institute of Steel Detailers (NISD)** and employers.

Computer aided drafting/design (CAD) training is also offered at the following post-secondary institutions:

- **Bow Valley College** in Calgary
- **Digital School** in Edmonton
- **Lethbridge Community College**
- **Medicine Hat College**
- the **Northern Alberta Institute of Technology (NAIT)** in Edmonton
- the **Southern Alberta Institute of Technology (SAIT)** in Calgary .

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

Steel detailers may be employed by steel fabrication companies, engineering and drafting firms or they may be self-employed. Through the use of information sharing technology, steel detailers can work on projects located anywhere in the world.

Experienced steel detailers can move into estimating, quality control or management. Or, they may operate their own steel detail drafting and design companies. Certified Alberta detailers who has have the supervisory or management skills required by industry may apply for an Achievement in Business Competencies Blue Seal by contacting Alberta Apprenticeship and Industry Training.

Steel detailers are part of the larger National Occupational Classification 2253: Drafting Technologists and Technicians. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Professional and Technical Services**
- **Metals, Metal Fabrication and Machinery Manufacturing**
- **Construction**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 4,150 Albertans are employed in the Drafting Technologists and Technicians occupational group which is expected to grow 1.8 to 2.8 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 70 to 120 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since steel detailers form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for steel detailers.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

According to the Alberta Occupational Training Committee for this designated occupation, steel detailers earn from **$30,000 to $60,000 a year** at the basic level. Senior steel detailers may earn over **$80,000 a year** (2004 estimate).

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Drafting Technologists and Technicians occupational group working part-time or full-time earned from **$16,600 to $150,100 a year.** The average salary was **$54,600 a year.**

Other Sources of Information

Alberta Apprenticeship and Industry Training offices website: www.tradesecrets.org

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Related Occupational Profiles

Civil Engineering Technologist
Drafting Technician
Engineering Design and Drafting Technologist

Related High School Subjects

Design Studies; Fabrication Studies; Information Processing; and Language Arts

Related Post-Secondary Fields of Study

Engineering and Science Technologies; and Trades, Industrial and Related Training

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For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Sterile Processing Technician

Produced AUGUST 2003

Sterile processing technicians gather, disassemble, clean, assemble, sterilize, store and distribute hospital instruments, supplies and equipment for re-use.

NOC Number(s): 3414.5
Minimum Education: High school diploma
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **O M i**

Duties

Sterile processing technicians' primary responsibility is infection control. Their duties vary from one position to another but, in general, they:

- sort, disassemble, clean and disinfect trays, instruments, carts, supplies and equipment
- select and use appropriate cleaning methods
- load, operate and maintain cleaning, sanitizing and sterilization equipment
- perform standard tests to monitor the effectiveness of sterilization procedures
- sort, assemble and package medical/surgical instruments and equipment
- report damaged or malfunctioning equipment and supplies
- store and rotate sterilized items
- provide instrument sets for surgical procedures and case carts for booked and emergency surgery
- inventory, select and replenish supplies to medical/surgical carts on a regular basis, and monitor quota levels and changes in demand levels
- make appropriate substitutions when necessary and report problems regarding availability of instruments and supplies
- use computers to order supplies, and process and maintain records.

Working Conditions

Sterile processing technicians work in health care environments that are noisy, busy, stressful and sometimes hot and humid. They must observe safety precautions to reduce the risk of exposure to infectious diseases and injury from hot surfaces. They are on their feet most of their shift and may routinely lift items weighing up to 10 kilograms.

Hospital central supply and sterile processing departments may operate 24 hours a day so technicians must work shifts that may include nights, weekends and holidays.

Personal Characteristics

Sterile processing technicians need the following characteristics:

- able to stand or walk for long periods of time
- not allergic to latex
- good motor co-ordination, manual dexterity and finger dexterity
- able to work under pressure and pay close attention to details
- good organizational skills
- good communication and teamwork skills
- an interest in contributing to community health and safety.

They should enjoy working with a team, operating equipment and using hand tools, and having clear guidelines and organized methods for their work.

Educational Requirements

(section revised JUNE 2004)

Some sterile processing technicians have been trained on the job but most employers look for applicants who have:

- certification in central sterile processing (or equivalent)
- a high school diploma (or equivalent)
- knowledge of basic medical terminology
- basic computer literacy.

In Alberta, the following post-secondary institutions offer training programs for sterile processing technicians:

- **Lethbridge Community College** offers a 24-week Central Sterile Processing program that includes eight weeks of work experience. The entrance requirement is a high school diploma with at least 60 per cent in English 30 (or 65 per cent in English 33) or equivalent. Biology is preferred. Applicants must submit a criminal record check and medical examination, and have appropriate innoculations prior to practicum placement.
- **Southern Alberta Institute of Technology (SAIT)** in Calgary offers a 21 week Sterile Processing Technician certificate program. The program includes a lab component and eight weeks of work experience at a clinical site. The entrance requirements are a high school diploma or equivalent with at least 50 per cent in English 30-1 (or English 30) or English 30-2 (or English 33), and English language proficiency requirements. Applicants must submit a criminal record check and have appropriate inoculations prior to practicum placement.

Related distance education programs are offered by **Vancouver Community College** in Vancouver and **Purdue University** in West Lafayette, Illinois.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

(section revised JANUARY 2006)

Sterile processing technicians are employed in:

- hospital central processing facilities, operating rooms and day procedure facilities
- doctor's offices
- private health care facilities
- surgical centres.

Without further education, advancement opportunities are limited.

Sterile processing technicians are part of the larger National Occupational Classification 3414: Other Assisting Occupations in Support of Health Services. In Alberta, most people employed in this classification work in the following industries:

- **Retail Trade**
- **Health Care and Social Assistance.**

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 7,100 Albertans are employed in the Other Assisting Occupations in Support of Health Services occupational group which is expected to grow 2.0 to 3.0 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 140 to 220 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since sterile processing technicians form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for sterile processing technicians.)

Employment turnover is expected to increase as members of the baby boom generation retire.

Salary

(section revised OCTOBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Other Assisting Occupations in Support of Health Services occupational group working part-time or full-time earned from **$11,900 to $58,200 a year.** The average salary was **$23,700 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Association of Central Service/Supply, Processing and Distribution website: www.albertaspd.com

Related Occupational Profiles

Licensed Practical Nurse
Pharmacy Assistant/Technician

Related High School Subjects

Community Health; Information Processing; Language Arts; Mathematics; Physical Education; and Science (Biology)

Related Post-Secondary Fields of Study

Health Care and Medical Sciences

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Structural Steel and Plate Fitter

Apprenticeship and Industry Training

Produced FEBRUARY 2006

Structural steel and plate fitters lay out, prepare and assemble structural steel and steel vessels, containers and miscellaneous components.

NOC Number(s): 7263
Minimum Education: Apprenticeship Trade - Grade 9
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: O M I

Duties

Structural steel and plate fitters fabricate:

- structural components for buildings, bridges and other load-carrying structures
- plates for tanks, boilers, pressure vessels and similar products.

Duties vary from one position to another but, in general, structural steel and plate fitters:

- review drawings and discuss them with the customer or with management
- plan the sequence of tasks and decide how to cut the steel most efficiently
- determine the materials required and obtain them from stock
- develop or mark patterns if required
- use metal-working machines and cutting torches to cut steel, drill or punch holes, and roll, bend or press steel into the desired shapes
- assemble and fit metal sections and plates together to form complete units or sub-units
- fasten components together (by mechanical means or tack weld) in preparation for a welder to complete the process.

Working Conditions

Structural steel and plate fitters usually work indoors in shops. They work a 40-hour week with some overtime required to meet construction or fabrication deadlines. There is always some risk of injury when working with heavy materials and power tools.

Structural steel and plate fitters may be required to lift items weighing over 25 kilograms.

Personal Characteristics

Structural steel and plate fitters need the following characteristics:

- physical strength and stamina
- good co-ordination and manual dextity
- mechanical aptitude
- the ability to work in close quarters.

They should enjoy physically demanding tasks.

Educational Requirements

To work in Alberta, structural steel and plate fitters must be ONE of the following:

- registered apprentices
- certified journeymen
- working for an employer who is satisfied that they have the skills and knowledge expected of certified journeymen
- self-employed.

To **register** with **Alberta Apprenticeship and Industry Training**, apprentices must:

- have at least an Alberta Grade 9 education (or equivalent) or pass an entrance exam
- find a suitable employer who is willing to hire and train an apprentice. Most employers prefer to hire high school graduates and may select apprentices from among their current employees. Courses in math are particularly important.

The **term of apprenticeship** is three years (three 12-month periods) that include a minimum of 1,500 hours of on-the-job training and eight weeks of technical training each year. High school students can become apprentices and gain credits toward apprenticeship training and a high school diploma at the same time through the Registered Apprenticeship Program (RAP).

Applicants who have related training or work experience may be eligible for credit or certification.

Structural steel and plate fitter apprentices may attempt the Interprovincial Exam in the final period of their apprenticeship training and, if successful, are granted a Red Seal (which is recognized in most parts of Canada).

Technical training is arranged by Alberta Apprenticeship and Industry Training and is currently offered at the Northern Alberta Institute of Technology (NAIT) in Edmonton.

Pre-employment programs for prospective apprentices and continuing education programs for journeymen may be offered on an as needed basis by the institution(s) listed above or other schools.

Employment and Advancement

Structural steel and plate fitters are employed by manufacturing, and commercial construction and repair shops in the steel fabrication and oil industries.

Experienced structural steel and plate fitters may advance to supervisory positions. Alberta certified journeyman structural steel and plate fitters who have the supervisory or management skills required by industry may apply for an Achievement in Business Competencies Blue Seal by contacting Alberta Apprenticeship and Industry Training.

Structural steel and plate fitters are part of the larger National Occupational Classification 7263: Structural Metal and Platework Fabricators and Fitters. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Metals, Metal Fabrication and Machinery Manufacturing**
- **Construction**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 700 Albertans are employed in the Structural Metal and Platework Fabricators and Fitters occupational group which is expected to grow 2.3 to 3.3 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 10 to 30 **new** positions will be created each year **in addition** to job openings created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Apprentice structural steel and plate fitters earn at least 60 per cent of the journeyman wage rate in their place of employment in the first year, 75 per cent in the second and 90 per cent in the third. According to the Alberta Provincial Apprenticeship Committee for this trade, journeyman wage rates vary, but generally range from **$21 to $32 an hour plus benefits** (2005 estimate).

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Structural Metal and Platework Fabricators and Fitters occupational group working part-time or full-time earned from **$21,000 to $81,000 a year.** The average salary was **$44,800 a year.**

Other Sources of Information

Alberta Apprenticeship and Industry Training website: www.tradesecrets.org

Alberta Construction Industry "Trade Up!" website: www.careersconstruction.com

Calgary Construction Association website: www.cca.cc

Construction Sector Council website: www.csc-ca.org

Related Occupational Profiles

Boilermaker
Ironworker
Sheet Metal Worker
Welder

Related High School Subjects

Construction Technologies; Design Studies; Fabrication Studies; Mathematics; and Physical Education

Related Post-Secondary Fields of Study

Trades, Industrial and Related Training

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Surface Mining Equipment Operator

Produced AUGUST 2005

Surface mining equipment operators use heavy equipment to recover minerals from near the earth's surface in open pit or strip mining operations.

NOC Number(s): 7421
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: O M i

Duties

In Alberta, the surface mining industry is primarily concerned with mining:

- energy minerals such as coal or heavy oil sands
- non-metallic minerals such as sand, gravel and lime.

The mining methods and equipment used vary with the type and location of mineral.

Surface mining equipment operators typically operate equipment such as:

- backhoes
- large tractor and rubber-tired dozers
- rubber-tired scrapers
- electrical or mechanical drive haul trucks
- graders
- front-end loaders
- service, water or other types of trucks
- draglines
- hydraulic or cable shovels
- utility vehicles/tractors for handling high voltage cables
- packers
- surface mine dewatering equipment
- equipment transporters
- stationary plant or conveyor systems.

Most of the mining done in Alberta is surface coal mining and oil sands mining. Two basic types of mining methods or a combination of both methods may be used:

- **Open pit mining** involves removing the overburden (topsoil, regolith and waste rock) by drilling holes with self-propelled drills in a blasting pattern.
- **Strip mining** uses draglines, cable or hydraulic shovels to remove the overburden and expose the ore.

In most situations, surface mining equipment operators use large front-end loaders or power shovels that may have huge buckets (up to 44 cubic meters in capacity) to load broken overburden and ore into large rear dump trucks (up to 360 metric tons). Truck drivers haul overburden materials to waste dumps and ore to ore processing plants. In some situations, materials are moved by conveyor belt.

Working Conditions

Surface mining equipment operators generally work shifts in environmentally controlled cabs or control rooms. Occasionally, they are required to work outdoors.

Safety precautions and protective equipment (safety boots, gloves, hard hats, glasses and hearing protection) are required to reduce the risk of injury associated with working near or with machinery. Lifting, up to 25 kilograms, may be routinely required.

Personal Characteristics

Surface mining equipment operators need the following characteristics:

- good hand-eye co-ordination to effectively and safely operate large equipment
- good hearing and eyesight
- good health with reasonable strength, agility and stamina
- good spatial perception for judging distances
- a concern for safety and the ability to remain alert while performing repetitive tasks
- a willingness to work a variety of shifts and schedules
- no fear of working in high places.

They should enjoy operating heavy equipment, having clear guidelines and organized methods for their work, and trouble shooting problems.

Educational Requirements

There are no standard education requirements for surface mining equipment operators. Employers generally prefer to hire applicants who have a high school diploma and experience working in a mine environment or operating heavy equipment in an industrial environment. An Alberta Class 5 driver's license is usually required. Construction Safety Training System (CSTS) and Workplace Hazardous Materials Information System (WHMIS) training are definite assets. Applicants may be required to pass a medical exam, pre-employment drug screening test or Differential Aptitude Test (DAT).

In Alberta, **Keyano College** in Fort McMurray offers:

- an eight week Heavy Construction Equipment Operations certificate program which specializes in the operation of crawler tractors, motor scrapers, compactors and skid-steerer loaders. Applicants for this program must be at least 18 years of age, have Grade 10 or equivalent education, have a valid Class 5 driver's licence and be physically fit. An interview is required.
- a ten month Mine Operations Training program that includes three months of paid work experience. Applicants for this program must be at least 18 years of age, have a high school diploma (or GED), have a valid Class 5 driver's license, complete a DAT and attend a personal interview.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check the Keyano College calendar or website.

Companies provide **on-the-job training** that includes an orientation to mine operations and information about health and safety practices, hazardous waste handling, environmental reporting procedures, standard practices and procedures, and waste management.

Employment and Advancement

(section revised JANUARY 2006)

In Alberta, most surface mining equipment operators work in open pit mines that extract oil sand or coal, or in rock quarries.

Surface mining equipment operators usually start as helpers, labourers or truck drivers and, with experience and on-the-job training, advance to larger or more complicated equipment and possibly to supervisory positions.

Surface mining equipment operators may be required to join a union as a condition of employment.

Surface mining equipment operators are part of the larger National Occupational Classification 7421: Heavy Equipment Operators (Except Crane). In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Construction**
- **Oil and Gas Extraction**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation**.

About 12,550 Albertans are employed in the Heavy Equipment Operators (Except Crane) occupational group which is expected to grow 2.2 to 3.2 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 270 to 400 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since surface mining equipment operators form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for surface mining equipment operators.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Heavy Equipment Operators (Except Crane) occupational group working part-time or full-time earned from **$21,200 to $154,000 a year.** The average salary was **$60,000 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Related Occupational Profiles

Blaster
Heavy Equipment Operator
Truck Driver
Underground Miner

Related High School Subjects

Energy and Mines; Language Arts; Mechanics; and Physical Education

Related Post-Secondary Fields of Study

Driver Training; and Trades, Industrial and Related Training

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Swine Technician

Produced FEBRUARY 2005

Swine technicians may be involved in all aspects of hog production or specialize in a particular area such as breeding or caring for pigs at a particular stage of growth.

NOC Number(s): 8253.2
Minimum Education: Less than high school
Employment Outlook: Employment turnover plus below average occupational growth in Alberta
Interests: **M I d**

Duties

Duties vary from one position to another but, in general, swine technicians:

- monitor the health and well being of pigs
- recognize and treat health problems in pigs
- ensure that water is available and pigs are fed the correct amount and type of feed
- monitor barn environments including temperature and air movement
- move animals to other locations the barn in a low stress manner
- carry out breeding and artificial insemination
- assist births
- dock tails, clip teeth and vaccinate, wean and sort pigs
- load hogs for transport
- use high pressure washer systems to clean barns
- maintain equipment and buildings
- keep paper and electronic records (e.g. births, weight gains, health treatments, breeding dates)
- perform general farm duties.

Swine technicians may supervise farm labourers.

Working Conditions

Swine technicians work primarily in barns but may work outdoors in all weather conditions. They must follow safety precautions to avoid injury when working with machinery and tools, wear protective clothing and follow good animal hygiene practices to prevent or control the spread of diseases and parasites. Modern barns are well ventilated and manure is flushed out regularly.

Lifting (up to 25 kg) is routinely required.

Personal Characteristics

Swine technicians need the following characteristics:

- physically fit
- no dust or ammonia allergies
- able to work independently and with others.

They should enjoy taking a methodical approach to farm duties and keeping records, and supervising feeding, health and breeding programs.

Educational Requirements

Many employers are willing to hire and train people who have no previous experience raising pigs if job applicants like animals and are:

- honest, reliable and punctual

- interested in working with pigs
- willing to work hard.

There are **no standard education requirements** in this occupation but, to work independently, swine technicians need knowledge and experience related to:

- swine husbandry (e.g. breeding, farrowing, feeding)
- animal behaviour (e.g. to distinguish between healthy behaviours and signs of illness)
- low stress livestock handling techniques
- safety procedures
- keeping barns clean and sanitary
- maintaining equipment
- keeping paper and electronic records.

The **Alberta Green Certificate Farm Training Program** through **Alberta Agriculture, Food and Rural Development** is an apprenticeship-type program that combines practical on-farm experience and training with formal education in the form of home study courses, workshops, short courses or college agricultural courses. The Green Certificate program offers three levels of training. Level 1 (swine technician) requires approximately six to nine months to complete. Applicants must be at least 15 years of age and have a supportive farm trainer and job site. Trainees who are also high school students can receive high school diploma credits in an approved optional curriculum.

Training Inc., a private vocational school in Lethbridge, offers a six week Swine Technician program. Applicants must have a high school diploma or equivalent, or satisfy mature student admission requirements.

Continuing education courses are offered on an as needed basis through agricultural colleges such as:

- **Lakeland College**
- **Lethbridge Community College**
- **Olds College**.

Employment and Advancement

(section revised JANUARY 2006)

Swine technicians work on farms. Most hog farms are family owned operations; about half have one or two employees. However, swine production operations are getting bigger and more specialized. For example, farms may specialize in breeding and producing piglets, raising piglets to market weight or raising purebred hogs to sell as breeding stock.

Those who successfully complete Level 1 of the Alberta Green Certificate Farm Training program may progress to Level 2 (production supervisor) and Level 3 (farm business manager).

Swine technicians are part of the much larger National Occupational Classification 8253: Farm Supervisors and Specialized Livestock Workers. In Alberta, over 75 per cent of people employed in this classification work in the **Agriculture** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and events affecting overall employment (especially in the Agriculture industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 1,050 Albertans are employed in the Farm Supervisors and Specialized Livestock Workers occupational group which is expected to grow up to 0.5 per cent each year from 2005 to 2010 in Alberta. (**Note**: Since swine technicians form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for swine technicians.)

There is a high turnover rate in this occupation and employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Farm Supervisors and Specialized Livestock Workers occupational group working part-time or full-time earned from **$16,800 to $105,100 a year.** The average salary was **$30,100 a year.**

Other Sources of Information

(section revised APRIL 2005)

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca

Alberta Pork website, Producer and Industry Information Centre: www.albertapork.com/producers.aspx

Related Occupational Profiles

Animal Care Attendant
Farm Worker/Technician
Livestock/Poultry Producer

Related High School Subjects

Agriculture; and Physical Education

Related Post-Secondary Fields of Study

Agriculture and Related Technologies

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Systems Auditor

Produced JULY 2004

Systems auditors conduct independent third-party reviews to assess the quality of software products, applications and information systems including hardware, networks and facilities.

NOC Number(s): 2171.4
Minimum Education: 4 years post-secondary education/training
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: **M D I**

Duties

(section revised OCTOBER 2005)

Systems auditors review, evaluate and provide pro-active, control-related advice regarding:

- the effectiveness of systems policy, standards and procedures
- the performance of computer information systems and software
- the security and control systems that protect the integrity and security of systems and data
- the development of new business and information systems.

In general, systems auditors work with staff and management of the organization being audited to assess the completeness, accuracy, validity and efficiency of information processing systems against acknowledged internal and external criteria (e.g. ISO 9000, EN29000, Sarbanes-Oxley, COBIT). While complying with standards, they must also take specific conditions into account.

Specific duties vary from one position to another in this evolving occupation. For example, systems auditors may:

- evaluate the accuracy, completeness and timeliness of transaction processing in business systems
- review application systems and business procedures to determine if they are achieving business objectives
- review the use of computing facilities
- assist in other financial and operational audits and projects.

Systems auditors spend a considerable amount of time consulting with people and writing reports. Their reports must be clear and logical.

Working Conditions

Systems auditors work in office environments with sophisticated information technology. They usually work standard weekday hours except when overtime is required to meet project deadlines.

Some positions require a significant amount of travel.

Personal Characteristics

Systems auditors need the following characteristics:

- the ability to learn quickly, think logically and understand abstract relationships
- the ability to pay close attention to details
- excellent oral and written communication skills
- excellent interpersonal and negotiation skills
- the ability to plan, organize and control several projects at the same time
- a keen interest in keeping up with ever-changing technology.

They should enjoy working with people from a wide variety of backgrounds and solving problems.

Educational Requirements

This is not an entry level position. The work requires knowledge of business practices, information management **and** computer technology. Therefore, systems auditors need a combination of related post-secondary education and experience in technical, accounting and business roles. For descriptions of related roles, see the Accountant, Internal Auditor, Information Systems Quality Assurance Analyst and Systems Security Analyst profiles. Employers generally prefer to hire applicants who have a degree in accounting, computer science or a related field, and professional certification.

There are a wide variety of degree and diploma programs related to computer science and accounting offered by universities, colleges, technical institutes and private vocational schools throughout Alberta. For information about accounting programs and designations (CA, CGA, CMA), see the Accountant occupational profile. For information about computer science programs, see the Computer Programmer occupational profile.

Before enrolling in any program, prospective systems auditors should discuss accounting and computer science education options with people already working in this field.

Other Requirements

Successful completion of an examination is required to qualify for the Certified Information Systems Auditor (CISA) designation from the Information Systems Audit and Control Association.

Information Systems Professional is a protected title under Alberta's Professional and Occupational Associations Registration Act. This means that to call yourself an Information Systems Professional, you must be a registered member of the Canadian Information Processing Society of Alberta (CIPS Alberta). You do **not** have to be registered if you do not call yourself an Information Systems Professional.

Employment and Advancement

(section revised JANUARY 2006)

Systems auditors are employed by large organizations in the private and public sectors, and by consulting firms.

Experienced systems auditors may advance to senior management positions.

Systems auditors are part of a larger computer systems analysts occupational group. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Professional and Technical Services**
- **Public Administration**
- **Finance, Insurance and Real Estate**
- **Oil and Gas Extraction**
- **Information, Culture and Recreation**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 16,050 Albertans are employed in the Information Systems Analyst and Consultants occupational group which is expected to grow 2.2 to 3.2 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 350 to 520 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since systems auditors form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for systems auditors.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised SEPTEMBER 2005)

Salaries for systems auditors vary depending on their education and experience, and the responsibilities of their positions.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Information System Analysts and Consultants occupational group working part-time or full-time earned from **$27,900 to $112,700 a year.** The average salary was **$70,800 a year**.

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

Canadian Information Processing Society (CIPS) website: www.cips.ca

Information Systems Audit and Control Association (ISACA) website: www.isaca.org

Software Human Resource Council (SHRC) website: www.shrc.ca

Related Occupational Profiles

Accountant
Computer Programmer
Data Administrator
Database Analyst
Information Systems Consultant
Information Systems Quality Assurance Analyst
Internal Auditor
School Business Official
Software Engineer
Systems Security Analyst
Systems Tester
Web Designer
Webmaster

Related High School Subjects

Information Processing; Language Arts; Logistics; Management and Marketing; Mathematics; and Science (Physics)

Related Post-Secondary Fields of Study

Business, Management and Administrative Studies; and Computer and Information Technology

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For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Systems Security Analyst

Produced JULY 2004

Systems security analysts are computer specialists who assess administrative, physical and technical security risks to data, software and hardware, and develop policies, procedures and contingency plants to prevent or minimize the effects of security breaches and concerns.

NOC Number(s): 2171.2
Minimum Education: 2 years post-secondary education/training
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: **M I D**

Duties

Systems security analysts plan, co-ordinate and implement security measures for information systems:

- control access to computer data files
- ensure that authorized users don't do things that might compromise data
- prevent hackers (people who are not supposed to have access to the data) from disabling computers or seeing, modifying or destroying the information they contain.

Duties vary from one job to another depending on the employer and the sensitivity of the information. However, in general, systems security analysts:

- develop plans to safeguard computer files and meet emergency data processing needs
- co-ordinate the implementation of computer systems plans with other people in the organization and outside vendors
- assist in implementing legislated information protection requirements (e.g. privacy requirements)
- test systems to make sure security measures are working
- modify security files to change user permissions, correct errors or install new software
- consult with other computer specialists and organizational personnel about issues such as data access requirements and programming changes
- monitor the use of data files and regulate access to safeguard data
- write reports to document computer security and emergency measures policies, procedures and test results
- conduct compliance audits to ensure that security standards and policies are being followed.

To keep up to date with new developments, systems security analysts share information via e-mail, use web-based resources that send out alerts about new threats (e.g. computer viruses), attend technical training courses and conferences, and read computer-related journals, magazines and newsletters.

Working Conditions

Systems security analysts usually work standard office hours in offices that are equipped with sophisticated information technology. They may be required to work overtime when there has been a security breach.

Analysts who work for consulting companies may be required to travel.

Personal Characteristics

Systems security analysts need the following characteristics:

- the ability to think logically and analyze complex problems
- the ability to remain alert while performing routine tasks
- the decisiveness, creativity and flexibility required to meet security challenges and solve problems quickly
- a high degree of honesty and integrity
- the ability to communicate and get along well with users, other computer specialists and managers throughout the organization

- a keen interest in keeping up to date with new developments.

They should enjoy analyzing information and solving problems, taking a methodical approach to tasks requiring precision and consulting with others.

Educational Requirements

(section revised NOVEMBER 2005)

Systems security analysts need related post-secondary education and several years of related experience (see the Computer and Network Operator, Computer Programmer and Systems Tester occupational profiles). Employers generally prefer to hire experienced applicants who have a four year bachelor's degree or two year diploma in computer science or a related discipline.

Systems security analysts must continuously upgrade their knowledge because systems and security threats are constantly changing.

In Alberta, universities, colleges, technical institutes and private vocational schools offer a wide variety of degree, diploma and certificate programs related to computer science. For a list, see the Computer Programmer profile.

The following Alberta institutions offer programs specifically related to systems security:

- **Alberta Career Computer Center Inc.**, a private vocational school in Edmonton, offers a 26-week Security Certified Network Professional program. The entrance requirements are a high school diploma with a Grade 12 English and Math or any Grade 11 Math or equivalent. All students must have previously completed IT designation/certification (e.g. MCSA, MCSE, CNE, CCNA, CCNP, etc.) and/or at least 2 years relevant work experience and/or a degree from a recognized university and/or a diploma from a recognized post secondary institution. They must also have Police Security clearance.
- **CDI College of Business, Technology and Health Care** in Calgary and Edmonton offers a 49-week Network and Internet Security Specialist certificate program. The entrance requirement is a high school diploma with English 30 or 33 and Math 30 or 33 or equivalent.
- **Concordia University College of Alberta** in Edmonton offers a 15-month after degree diploma in Information Systems Security that includes a three month practicum. Applicants must have an acceptable average in a degree program, have at least six credits in math and 18 credits in senior-level computing sciences courses, and pass security clearance requirements.
- **Northern Alberta Institute of Technology (NAIT)** in Emonton offers Continuing Education certificate programs in System Security and Microsoft Windows Systems Administrator - Security and Internet Services Specialty.
- **Prestwick College**, a private vocational school in Calgary offers a 35-week Certified Security Specialist program. The entrance requirement is a high school diploma with Grade 12 English and math, or equivalent.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Other Requirements

(section revised OCTOBER 2004)

Information Systems Professional is a protected title under Alberta's Professional and Occupational Associations Registration Act. This means that to call yourself an Information Systems Professional, you must be a registered member of the Canadian Information Processing Society of Alberta (CIPS Alberta). You do **not** have to be registered if you do not call yourself an Information Systems Professional.

Employment and Advancement

(section revised JANUARY 2006)

Systems security analysts are employed by organizations that have a web presence (website, FTP site, e-mail service, etc.) and by consulting firms.

When firms hire consulting firms to perform security functions, they still need inhouse personnel to ensure that consulting agreements are functioning as intended. These inhouse positions usually have a strong internal compliance component related to auditing and privacy compliance.

Advancement generally takes the form of more responsibility. The best and brightest systems security analysts may become sneakers who identify security holes by deliberately cracking systems.

Systems security analysts are part of a larger computer systems analysts occupational group. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Professional and Technical Services**
- **Public Administration**
- **Finance, Insurance and Real Estate**
- **Oil and Gas Extraction**
- **Information, Culture and Recreation**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 16,050 Albertans are employed in the Information Systems Analyst and Consultants occupational group which is expected to grow 2.2 to 3.2 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 350 to 520 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since systems security analysts form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for systems security analysts.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised SEPTEMBER 2005)

Salaries for systems security analysts vary depending on their education and experience, and the responsibilities of their positions.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Information System Analysts and Consultants occupational group working part-time or full-time earned from **$27,900 to $112,700 a year.** The average salary was **$70,800 a year.**

Other Sources of Information

EDinfo website: www.alis.gov.ab.ca/edinfo

Canadian Information Processing Society (CIPS) website: www.cips.ca

International Systems Security Association (ISSA) website: www.issa.org

Software Human Resource Council (SHRC) website: www.shrc.ca

System Administration, Networking and Security Institute website: www.sans.org

Related Occupational Profiles

Computer and Network Operator
Computer Programmer
Information Systems Consultant
Information Systems Quality Assurance Analyst
Systems Auditor
Systems Tester

Related High School Subjects

Information Processing; Language Arts; Mathematics; and Science

Related Post-Secondary Fields of Study

Business, Management and Administrative Studies; Computer and Information Technology; Engineering and Science Technologies; and Engineering, Architecture and Related Studies

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Systems Tester

Produced JULY 2004

Systems testers execute test plans to evaluate the performance of computer software, information systems and telecommunication systems.

NOC Number(s): 2283
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: **M O i**

Duties

Developing and implementing software applications and information and telecommunication systems involves a great deal of testing for bugs (errors/faults), reprogramming to correct bugs and testing again to make sure the new programming works and has not created new bugs. Complex applications require several testing cycles because different types of testing are needed at different stages of development and implementation. For example, a system may be tested to determine first how it works on its own, then how it works in a network environment.

Duties and responsibilities vary from one job to another but, in general, systems testers:

- review and analyze development documents
- develop test plans
- prepare test cases, test scripts and test data
- run tests and do some exploratory testing
- ensure that software specifications are met and the software doesn't crash (stop working) even when it is used in ways developers may not have anticipated (e.g. clicking on inappropriate areas of the screen)
- document results (keep detailed records about what they did that resulted in an error message so programmers can replicate the problem and figure out what caused it).

They may also:

- prepare for testing by installing computer hardware and software (including operating system software)
- look for bugs in any automated testing tools they use.

Systems testers usually work closely with other computer specialists such as system developers (see the Computer Programmer occupational profile) and quality assurance analysts (see the Information Systems Quality Assurance Analyst profile).

Working Conditions

Systems testers work standard office hours in office environments. Evening or weekend work may be required to meet project deadlines.

Personal Characteristics

Systems testers need the following characteristics:

- the ability to think logically and analytically
- the ability to follow instructions and pay close attention to detail
- the ability to communicate clearly and tactfully
- the ability to work well in teams and on their own.

They should enjoy taking a methodical approach to tasks requiring precision, analyzing information to solve problems and consulting with others.

Educational Requirements

Systems testers are usually graduates of post-secondary programs related to computer science or training programs offered by software vendors. Some employers require job applicants to have certification or training in a specific type of software.

Systems testers must continuously upgrade their knowledge because computer technology is constantly changing.

In Alberta, universities, colleges, technical institutes and private vocational schools offer a wide variety of degree, diploma and certificate programs related to computer science. For a list, see the Computer Programmer occupational profile. Prospective systems testers should talk to potential employers about required and preferred qualifications before enrolling in an education or training program.

Other Requirements

(section revised OCTOBER 2004)

Information Systems Professional is a protected title under Alberta's Professional and Occupational Associations Registration Act. This means that to call yourself an Information Systems Professional, you must be a registered member of the Canadian Information Processing Society of Alberta (CIPS Alberta). You do **not** have to be registered if you do not call yourself an Information Systems Professional.

Employment and Advancement

Systems testers are employed wherever software applications, information systems and telecommunication systems are developed and implemented.

Experienced testers who have the required training and experience may move into computer programmer or quality assurance analyst positions, or positions related to the types of systems they have experience testing. For example, those experienced in testing interactive media applications (e.g. computer games), web-based software or database applications (e.g. Internet programs) may move into interactive media developer, web developer or database analyst positions.

Systems tester is a new and rapidly growing occupation.

Salary

(section revised OCTOBER 2005)

Salaries for systems testers vary considerably, depending on the responsibilities of the position and the tester's education and experience.

According to the **2005 Alberta Wage and Salary Survey**, Albertans with three years of experience working part-time or full-time in the Systems Testing Technicians occupational group earned from **$34,600 to $46,300 a year.** The average salary was **$38,200 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

Canadian Information Processing Society (CIPS) website: www.cips.ca

Software Human Resource Council (SHRC) website: www.shrc.ca

Related Occupational Profiles

Computer and Network Operator
Computer Programmer
Customer Support Analyst
Database Analyst
Information Systems Quality Assurance Analyst
Interactive Media Developer
Software Engineer
Systems Auditor
Systems Security Analyst
Web Designer
Web Technician

Related High School Subjects

Information Processing; Language Arts; Mathematics; and Science

Related Post-Secondary Fields of Study

Computer and Information Technology

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Taxi Driver

Produced JULY 2003

Taxi drivers operate automobiles and vans to transport passengers from one place to another.

NOC Number(s): 7413.1
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: O M S

Duties

Taxi drivers charge passengers a fee based on the distance and time driven. In general, they:

- pick up passengers or meet passengers in response to a dispatched call or a pre-arranged booking
- help passengers board or leave the taxi
- provide directions and information about the area, town or city
- report by radio and/or computer monitor to a central dispatcher
- drive vehicles safely and efficiently to desired destinations
- collect fares and make change
- clean vehicles daily
- perform routine meter and maintenance checks (e.g. check the tires and oil levels)
- ensure that their vehicles meet mechanical safety standards.

Working Conditions

Driving a taxi can be emotionally and physically demanding. Drivers work in all types of weather and road conditions, and may routinely lift luggage and other items weighing up to 25 kilograms. Many drivers work ten hours or more each day, often six days a week. Some drivers prefer to work night shifts because there is less traffic.

Personal Characteristics

Taxi drivers need the following characteristics:

- the ability to remain diplomatic and courteous in dealing with the public, from their first passenger to their last passenger of the day
- the motor co-ordination, manual dexterity and spatial perception required to safely operate a vehicle
- resourcefulness for dealing with difficult passengers
- a neat personal appearance and willingness to keep their vehicles clean
- an awareness of passengers' comfort and safety needs
- self-discipline.

They should enjoy driving vehicles, having clear rules and guidelines for their work and dealing with people.

Educational Requirements

There are **no standard education requirements**. However, taxi drivers must:

- have an Alberta Class 4 driver's license
- be able to communicate well and provide good customer service
- have a thorough knowledge of local house numbering systems and the locations of important buildings and landmarks
- have a municipal taxi permit and no criminal convictions (a criminal abstract must be obtained from the police).

Some municipal taxi commissions require permit applicants to successfully complete a two day course for new drivers.

Demerit points and moving convictions are monitored by the municipality and individual cab companies. Often, cab companies will not allow drivers to work if they have more than six demerit points.

Employment and Advancement

(section revised JANUARY 2006)

Most taxi drivers are self-employed. Some drivers own their own vehicles; others prefer to lease or rent a vehicle.

Taxi drivers are part of the larger National Occupational Classification 7413: Taxi and Limousine Drivers and Chauffeurs. In Alberta, most people employed in this classification work in the **Transportation and Warehousing** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Transportation and Warehousing industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

About 4,650 Albertans are employed in the Taxi and Limousine Drivers and Chauffeurs occupational group which is expected to grow 1.5 to 2.5 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 60 to 120 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since taxi drivers form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for taxi drivers.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Most drivers work on a flat rate per shift: the driver pays a certain amount per day to the company for using the cab, and revenues over that amount belong to the driver. Some work part-time or have other jobs as well.

Out of their earnings, owner-drivers must pay expenses such as gas, oil, repairs, car payments and stand rent. This may leave little profit. Another option is to hire another driver to drive the cab on a second shift so the car runs almost 24 hours a day.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Taxi and Limousine Drivers and Chauffeurs occupational group working part-time or full-time earned from **$12,600 to $42,600 a year.** The average salary was **$19,700 a year.**

Related Occupational Profiles

Bus Driver
Chauffeur
Dispatcher
Driving Instructor
Truck Driver

Related High School Subjects

Language Arts; and Physical Education

Related Post-Secondary Fields of Study

Driver Training

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Technical Sales Representative

Produced OCTOBER 2003

Technical sales representatives sell technical goods and services to government, commercial and industrial establishments. They may sell commodities such as computers, software and business machines or services such as technical analysis and consulting services.

NOC Number(s): 6221
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: **O S i**

Duties

Technical sales representatives are sometimes called account executives, sales engineers or account managers. In general, they are responsible for:

- identifying sales opportunities
- identifying key customer requirements and showing customers how their organizations' products or services satisfy those requirements
- negotiating and closing sales deals
- following-up with customers to ensure customer satisfaction and expand business opportunities
- maintaining and updating data about their territories and accounts.

This requires that technical sales representatives know:

- their company's business strategy and product lines
- how products are used
- competitors' products and strategies
- their customers' needs.

Technical sales representatives spend much of their time visiting prospective buyers or "prospecting" sales.

Most technical companies designate specific territories for their sales representatives. Sales territories may be geographical, by market segment (e.g. medical, legal) or by type of organization (e.g. government department, bank, oil company).

Working Conditions

The technical sales field is highly competitive. Companies may set goals or quotas and offer prizes to those who make the most sales. Because their incomes often depend on commissions, technical sales representatives are under constant pressure to maintain and expand their client base.

Many technical sales representatives work long hours. They may be required to entertain customers in the evening.

Some technical sales representatives have large geographic territories and travel frequently. They may be away from home for several days or weeks at a time.

Personal Characteristics

Technical sales representatives need the following characteristics:

- self-confidence, persistence, initiative and enthusiasm
- good communication and negotiating skills
- the ability to build rapport and gain trust
- the organizational skills and self-discipline required to manage their time effectively
- the ability to work independently and as part of a team
- the ability to cope with uncertainty, stress and long hours.

They should enjoy persuading people to purchase goods or services and analyzing information to identify and solicit potential clients.

Educational Requirements

Most employers prefer to hire technical sales representatives who have **technical qualifications plus several years of experience working with the type of product they sell.** For example, depending on the industry, employers may be looking for a background in equipment operation, trades, business administration, marketing, engineering, computer science, pharmacy or agriculture. Computer skills are often required.

Suitable post-secondary programs are offered by universities, colleges and technical institutes throughout Alberta. Entrance requirements vary depending on the program and the institution. In general, however, the entrance requirement for:

- two year diploma programs is a high school diploma or equivalent with appropriate courses at the Grade 12 level.
- for degree programs is an average of at least 60 per cent (70 per cent for some programs) in English 30 and four other appropriate Grade 12 subjects (e.g. Pure Math 30, Social Studies 30, 30-level sciences).

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employers often offer product-specific **in-house training** programs for technical sales representatives, ranging in length from a few weeks to several months. Training programs may be offered in locations other than the sales representative's home base.

Sales representatives must keep up to date with technological changes affecting their customers' companies.

Employment and Advancement

(section revised JANUARY 2006)

Technical sales representatives work for:

- technical and industrial equipment manufacturers and resellers
- computer software firms
- engineering and technology service firms
- pharmaceutical companies.

They may be employed full-time or be self-employed contractors.

Advancement opportunities depend on the size and nature of the company, and the individual's sales abilities. Many companies require front-line sales experience for advancement to senior level positions.

Technical sales representatives are part of the larger National Occupational Classification 6221: Technical Sales Specialists - Wholesale Trade. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Wholesale Trade**
- **Information, Culture and Recreation**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 14,750 Albertans are employed in the Technical Sales Specialists - Wholesale Trade occupational group which is expected to grow 2.1 to 3.1 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 300 to 460 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since technical sales representatives form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for technical sales representatives.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Most technical sales representatives work on a straight commission basis; some have salaried positions. Some companies offer a base salary plus commission or an incentives system of payment. Company cars (or car allowances) and expense accounts are common in this occupation.

Total earnings vary considerably depending on the type of product being sold and the industry.

According to the **2005 Alberta Wage and Salary Survey**, Albertans with three years of experience working part-time or full-time in the Technical Sales Specialists - Wholesale Trade occupational group earned from **$22,600 to $144,200 a year.** The average salary was **$59,100 a year**.

Other Sources of Information

Canadian Professional Sales Association website: www.cpsa.com

Related Occupational Profiles

Agrologist
Civil Engineering Technologist
Computer Engineer
Instrumentation Engineering Technologist
Mechanical Engineer
Rig Technician
Sales Representative (Wholesale, Nontechnical)
Telecommunications Engineering Technologist

Related High School Subjects

Information Processing; Language Arts; Logistics; Management and Marketing; Mathematics; Science (Biology; Chemistry; and Physics); and Social Studies

Related Post-Secondary Fields of Study

Agriculture and Related Technologies; Aviation; Business, Management and Administrative Studies; Communications; Computer and Information Technology; Driver Training; Education and Library Studies; Engineering and Science Technologies; Engineering, Architecture and Related Studies; Environment, Forestry and Related Studies; Health Care and Medical Sciences; Physical Education and Recreation; Sciences; and Trades, Industrial and Related Training

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For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Technical Writer

Produced JUNE 2005

Technical writers translate complex technical information into simpler language. They shape and deliver information to meet the needs of a target audience.

NOC Number(s): 5121.2
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **I M o**

Duties

Technical writers produce information for audiences ranging from novices to technical experts. In general, they:

- research subjects by analyzing reference materials (e.g. specifications, blueprints, diagrams, maintenance manuals, reports, studies), consulting experts and using products themselves
- analyze how to structure and format information to meet target audience needs
- write content for on-line help files, reference materials, procedural and policy manuals, user guides, proposals, technical reports and instructional materials that explain the installation, operation and maintenance of mechanical, electronic and other equipment (e.g. oil industry equipment or computer applications)
- rewrite and edit drafts after they have been reviewed by technical experts for accuracy
- manage documentation projects.

They also may define terms, index or cross-reference information, or obtain copyright permissions to reprint material.

Technical writers may work independently or as part of a team that includes scientists, engineers, computer specialists, management personnel, editors, other writers, illustrators or photographers.

Working Conditions

Technical writers employed by medium-sized or large organizations generally work standard office hours although they sometimes work overtime to meet deadlines. Freelance writers can set their own hours but must be prepared to work long hours when required to complete projects on time. The pressure associated with having to meet deadlines can be stressful.

Personal Characteristics

Technical writers need the following characteristics:

- adaptability and flexibility
- the ability to communicate and work effectively with a variety of people (e.g. engineers, publishers, editors, art directors, film producers, readers of varying ability)
- the ability to deal with and learn from criticism
- good organizational, time management and project management skills.

They should enjoy gathering and synthesizing information, taking a methodical approach to explaining procedures, and finding out how things are built and operate.

Educational Requirements

There are no standard education requirements for technical writers but they generally need:

- a good grasp of grammar and the ability to express ideas clearly in writing
- some knowledge of technology
- research, interviewing and analytical skills
- editing and proofreading skills.

Practical writing and design layout experience gained through part-time or entry-level positions with publishing companies, newspapers or magazines is an asset.

Employers generally prefer to hire technical writers who have related post-secondary education or experience and can supply samples of their work.

Post-secondary institutions throughout Alberta offer communications-related courses as part of certificate, diploma and degree programs offered full-time, part-time and by distance education. The following institutions offer programs specifically related to technical writing:

- **Grant MacEwan College** in Edmonton offers a four year Bachelor of Applied Communications degree program in Professional Writing with a specialization in technical writing and a paid practicum. The entrance requirement is a high school diploma or equivalent with an average of at least 65 per cent in English Language Arts 30-1 (or English 30) and four other 30 level subjects selected from specified groups. Applicants also must submit three samples of their written work and successfully complete a two hour test.
- **Mount Royal College** in Calgary offers a four year Bachelor of Applied Communications degree program with a specialization in technical communication. The admission requirement is a high school diploma or equivalent with an average of at least 60 per cent in English Language Arts 30-1 (or English 30) and four other appropriate Grade 12 subjects.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Continuing education programs are often offered on an as needed basis.

Technical writers must keep their skills and knowledge up to date through professional development activities such as taking continuing education courses, attending workshops and conferences, reading and communicating with others in their field.

Employment and Advancement

(section revised JANUARY 2006)

Technical writers may be employed full-time, part-time or on a contract basis by public organizations or businesses such as:

- software development companies, Internet design firms and multimedia content providers
- publishers
- corporate communications and human resource departments
- manufacturing firms
- construction companies and safety organizations
- research laboratories
- oil and gas companies
- military contractors
- educational institutions
- government departments
- pharmaceutical companies.

Experienced technical writers may advance to supervisory or management positions. Those who have the required knowledge and skills may move into a related occupation such as editor, graphic designer, videographer, translator, interactive media developer, or private trainer or facilitator.

Technical writers are part of the larger National Occupational Classification 5121: Authors and Writers. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Information, Culture and Recreation**
- **Professional and Technical Services**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation**.

Over 2,450 Albertans are employed in the Authors and Writers occupational group which is expected to grow 1.0 to 2.0 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 20 to 50 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since technical writers form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for technical writers.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

According to a 2002 salary survey conducted by the Alberta Chapter of the Society of Technical Communication, the average income of Alberta technicial writers who have two to six years of experience was about **$43,700 per year**. The average annual income reported in Alberta was about **$60,600 per year.**

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Authors and Writers occupational group working part-time or full-time earned from **$15,300 to $85,400 a year.** The average salary was **$42,600 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Society for Technical Communication (STC), Alberta Chapter website: www.stc-alberta.org

Related Occupational Profiles

Creative Writer
Editor
Reporter

Related High School Subjects

Communication Technology; Design Studies; Energy and Mines; Information Processing; Language Arts; Mathematics; Mechanics; Science; and Social Studies

Related Post-Secondary Fields of Study

Communications; and Humanities and Languages

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Telecommunications Engineering Technologist

Produced FEBRUARY 2004

Telecommunications engineering technologists research, design, implement, analyze, manage and integrate wired and wireless voice and data networking and communications devices and systems.

NOC Number(s): 2241.1
Minimum Education: 2 years post-secondary education/training
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: O I M

Duties

Telecommunications engineering technologists work with devices and systems involving the transmission and reception of information, including the following technologies:

- voice, digital data and video (broadcast and cable)
- fibre optic, networking and optical switching
- wireless (e.g. radio, television, satellite, microwave, cellular)
- voice over information processing (a method of moving voice conversation over the Internet)
- computers and associated devices
- local and wide area networks
- broadband technologies
- traditional telephone systems (switching, transmission and multiplexing technologies).

Telecommunications engineering technologists may be involved in:

- the implementation, analysis, maintenance, management and integration of telecommunications systems and equipment
- the research and design of telecommunications systems
- the manufacture of telecommunications devices and systems
- technical sales and product representation of telecommunications systems (for more information, see the Technical Sales Representative occupational profile).

Duties and responsibilities therefore vary from one position to another but, in general, telecommunications engineering technologists:

- research, design, implement, analyze, manage and integrate telecommunications systems
- plan, draw and analyse analog and digital electronic circuits related to telecommunications systems
- assist in the production and quality control of telecommunications systems and products
- implement software upgrades and hardware expansions for telecommunications and information processing networks
- prepare and present business and technical reports and plans.

Working Conditions

Telecommunications engineering technologists may work in offices, workshops or production departments. Occasionally, they work in equipment areas that may be in sheltered or unsheltered environments. Some travel may be required when commissioning or maintaining equipment. Lifting equipment weighing up to 25 kilograms is sometimes required.

Hours of work vary and may include evenings, weekends and holidays. Telecommunications engineering technologists may be required to work overtime to meet deadlines or deal with emergencies.

Personal Characteristics

Telecommunications engineering technologists need the following characteristics:

- an aptitude for and interest in science and mathematics
- analytical and problem-solving skills
- leadership skills
- pa ience and persistence combined with good time management skills
- excellent oral and written communication skills
- fine motor skills and good eye-hand co-ordination
- the ability to work alone and with a team
- the ability to work under the pressure of deadlines
- good customer service skills
- a commitment to life long learning.

They should enjoy:

- working with tools, equipment, instruments and machinery at tasks requiring precision
- analyzing problems and finding innovative solutions
- taking a methodical approach to building and testing systems
- supervising others.

Educational Requirements

(section revised SEPTEMBER 2005)

Telecommunications engineering technologists need at least two years of related post-secondary education or an equivalent combination of education and experience. They need an understanding of:

- network security practices and systems
- processes surrounding the implementation of information processing (IP) and telecommunications networks
- hybrid networks that are wired/wireless or combine IP and legacy telecom network interfaces.

In Alberta, the following institutions offer programs in telecommunications technology:

- the **Northern Alberta Institute of Technology (NAIT)** in Edmonton offers a two year Telecommunications Engineering Technology diploma program. The minimum admission requirement is a high school diploma with English 30 or 33, one of Physics 30, Chemistry 30 or Science 30, and Pure Math 30 or Math 30 or 33 or successful completion of Transitional Mathematics 101 or at least 65 per cent in Algebra 35.
- the **Southern Alberta Institute of Technology (SAIT)** in Calgary offers a two year Telecommunications Technology diploma program. The minimum admission requirement is a high school diploma or equivalent with Pure Math 30 and English Language Arts 30-1 or English Language Arts 30-2 and a minimum 20 level science.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Other Requirements

(section revised JULY 2005)

Certification with the Alberta Society of Engineering Technologists (ASET) is voluntary.

Under Alberta's Engineering, Geological and Geophysical Professions Act, Registered Professional Technologists - Engineering must be ASET members to engage in a defined scope of engineering practice as registered by the Association of Professional Engineers, Geologists and Geophysicists of Alberta (APEGGA).

Employment and Advancement

(section revised JANUARY 2006)

Telecommunications engineering technologists are employed by:

- cable and satellite communication companies
- wireless and fibre optic companies
- public and private telecommunications companies
- federal, provincial and municipal governments
- colleges, universities and technical institutes

- companies in the oil and gas industry
- private contracting and consulting organizations
- personal consulting services.

Experienced telecommunications engineering technologists may advance to supervisory and management positions.

Telecommunications engineering technologists are part of the larger National Occupational Classification 2241: Electrical and Electronics Engineering Technologists and Technicians. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Professional and Technical Services**
- **Information, Culture and Recreation**
- **Other Manufacturing**
- **Oil and Gas Extraction**
- **Public Administration**
- **Educational Services**
- **Management, Administrative and Other Support Services**
- **Construction**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 6,500 Albertans are employed in the Electrical and Electronics Engineering Technologists and Technicians occupational group which is expected to grow 2.4 to 3.4 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 150 to 230 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since telecommunications engineering technologists form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for telecommunications engineering technologists.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Salaries for telecommunications engineering technologists vary considerably.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Electrical and Electronics Engineering Technologists occupational group working part-time or full-time earned from **$22,100 to $126,100 a year.** The average salary was **$74,400 a year.**

For more detailed information, see ASET's Annual Salary Surveys.

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Society of Engineering Technologists (ASET) website: www.aset.ab.ca

Association of Professional Engineers, Geologists and Geophysicists of Alberta (APEGGA) website: www.apegga.org

Related Occupational Profiles

Broadcast Maintenance Technologist
Canadian Forces Personnel - Non Commissioned
Communication Technician
Electronics Engineering Technologist
Instrumentation Engineering Technologist
Technical Sales Representative

Related High School Subjects

Communication Technology; Design Studies; Electro-Technologies; Enterprise and Innovation; Information Processing; Language Arts; Mathematics; Physical Education; and Science (Chemistry; and Physics)

Related Post-Secondary Fields of Study

Engineering and Science Technologies

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Telemarketer

Produced NOVEMBER 2005

Telemarketers call potential customers to sell goods and services, request donations or conduct surveys.

NOC Number(s): 6623.4
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus below average occupational growth in Alberta
Interests: **M s d**

Duties

Telemarketers may telephone businesses or private individuals to:

- identify potential customers and arrange appointments for sales demonstrations
- build relationships with current and potential customers
- solicit sales for goods or services
- ask for donations for charitable causes
- conduct market or client surveys.

They may obtain names and telephone numbers from lists of previous customers or donors, reply cards from magazines, lists obtained or purchased from other sources, telephone directories or Internet searches.

Duties and responsibilities vary from one organization to another but, in general, telemarketers:

- telephone prospective customers to describe the service or merchandise offered, or to solicit information for surveys
- deliver prepared sales talks that are designed to initiate conversations about products and services, and persuade customers to buy
- answer questions and quote prices
- record names, addresses, purchases and reactions, or sign people up to attend sales presentations.

Working Conditions

Telemarketers may work flexible hours from their own homes, or work shifts in an automated office environment. Evening and weekend work is usually required.

Personal Characteristics

Telemarketers need the following characteristics:

- a pleasant telephone voice that conveys sincerity and confidence
- tenacity, a strong sense of self-esteem and a sense of humour
- good organizational skills
- the ability to work independently or as part of a team
- the ability to perform repetitious tasks and deal with the stress of handling rejections
- the ability to think quickly and answer smoothly and tactfully.

They should enjoy taking a methodical approach to their work, persuading people and distributing information to other workers.

Educational Requirements

There are no minimum education requirements for telemarketers but most employers prefer to hire high school graduates. Sales experience, strong keyboarding skills and the ability to speak more than one language are definite assets.

Telemarketers are usually trained on the job. They need to learn about the product or service they promote so they can talk about it confidently and answer questions correctly.

Employment and Advancement

(section revised JANUARY 2006)

Telemarketers are employed by:

- organizations with in-house telemarketing departments
- service bureaus that contract out telemarketing services to other companies and charities.

Experienced telemarketers may advance to supervisory, training or script writing positions.

Telemarketers are part of the larger National Occupational Classification 6623: Other Elemental Sales Occupations. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Retail Trade**
- **Management, Administrative and Other Support Services**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 6,250 Albertans are employed in the Other Elemental Sales Occupations group which is expected to grow 0.7 to 1.7 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 40 to 110 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since telemarketers form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for telemarketers.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Telemarketers may be paid an hourly wage or work on commission. Earnings for those who work on a commission basis may be higher but vary from month to month depending on how much they sell.

According to the **2005 Alberta Wage and Salary Survey**, part-time or full-time starting salaries for Albertans working in the Telephone Solicitors and Telemarketers occupational group ranged from **$8,200 to $23,600 a year.** After three years, salaries ranged from **$10,900 to $31,500.** The average salary was **$18,100 a year**.

Related Occupational Profiles

Call Centre Agent
Direct Distributor
Retail Salesperson

Related High School Subjects

Language Arts; Languages (other than English); and Management and Marketing

Related Post-Secondary Fields of Study

Clerical and Administrative Support

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Telephone Operator

Produced SEPTEMBER 2002

Telephone operators operate computerized or conventional telephone systems to complete connections for telephone calls and provide information to customers.

NOC Number(s): 1424
Minimum Education: High school diploma
Employment Outlook: Employment turnover plus below average occupational growth in Alberta
Interests: M S O

Duties

Duties vary from one employer to another in this occupation. In general, however, telephone operators:

- complete connections for telephone calls including local, long distance (domestic and overseas), coin telephone, mobile radio/telephone and emergency calls
- provide directory information or rate and route information and assistance to customers
- provide relay service for the deaf and hard of hearing
- calculate and record charges as required and bill and credit accordingly
- set up conference calls in different locations and time zones, and handle business, message or other special service calls
- promote company products, services and saving plans when appropriate
- complete required reports and studies.

As telecommunications technology advances, more of this work is being done by computers and other communication tools such as voice mail systems.

In addition to telephone duties, operators may be required to operate fax machines, help with office administration duties or handle special projects and assignments.

Working Conditions

Telephone operators work in modern office environments. They often work shifts, including weekends and holidays. Compensation for split shifts, late shifts or weekend shifts may take the form of reduced hours or additional pay. Some operators work part-time.

Personal Characteristics

Telephone operators need the following characteristics:

- good hearing and a clear speaking voice
- a pleasant manner and a service-oriented attitude
- good spelling and keyboarding skills, and basic mathematical skills
- the ability to concentrate on the customer's request and work quickly and accurately
- good communication skills including questioning skills
- the ability and patience required to deal effectively with emergency and stressful situations
- the tact needed to deal with the occasional customer who is persistent or rude.

They should enjoy having clear rules and organized methods for their work, dealing with people and operating telephone systems.

Educational Requirements

Most employers require their telephone operators to have **a high school diploma** plus one year of experience in customer service. Computer skills and the ability to speak a second language are definite assets.

Telephone operators are **trained on the job**. New employees may not be assigned to telephone operator positions until they have worked for the organization long enough to be familiar with its operations.

Telus Communications Inc. conducts in-service training sessions for new employees in centres throughout Alberta. Four to five months of post-training experience is generally required before operators are ready to handle the average load. A six-month probationary period is required.

Employment and Advancement

(section revised JANUARY 2006)

In Alberta, telephone operators are employed primarily by Telus Communications. Operators who have been with the company for a number of years may train for and move to other positions in the organization. Competition for better-paying positions is keen.

In Alberta, over 75 per cent of people employed as telephone operators work in the following industries:

- **Information, Culture and Recreation**
- **Management, Administrative and Other Support Services**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 750 Albertans are employed in the Telephone Operators occupational group which is expected to grow up to 0.5 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Technological innovations and conversions to call centre operations will continue to limit employment growth in this occupation (for more information, see the Call Centre Agent occupational profile).

Salary

Salaries for telephone operators range from about **$12 to $18 per hour (2002 estimate).**

Related Occupational Profiles

Call Centre Agent

Related High School Subjects

Language Arts; Languages (other than English); and Mathematics

Related Post-Secondary Fields of Study

Clerical and Administrative Support

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Television Audio/Video Operator

Produced APRIL 2003

Audio and video operators set up, prepare and operate television audio and video broadcasting equipment.

NOC Number(s): 5225
Minimum Education: 2 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: O M I

Duties

Audio operators set up, prepare, operate and adjust audio recording, editing and reproducing equipment at television stations and remote broadcast locations. In general, they work at audio consoles or with computers to:

- mix sound inputs or feeds
- regulate the volume and technical quality of sound during the production of pre-recorded and live television broadcasts
- edit audio material before and after productions.

During a production or broadcast, audio operators bring in required sound elements at pre-determined times. Sometimes, they must co-ordinate a number of audio feeds with a television picture. Feeds may include pre-recorded material, records, compact discs, digital audio devices and videotapes, as well as inputs from live microphones, satellites or microwave trucks.

Videotape operators, sometimes called VTR operators, prepare and operate videotape and non-linear computer equipment at television stations and remote broadcast locations. In general, they:

- set up and load videotapes as required for broadcast each day
- import station programming, commercials and promotional materials into non-linear playback servers
- prepare and operate videotape and non-linear playback equipment during the production of live and pre-recorded programming
- edit videotapes and add video and/or sound as required
- monitor and record program, commercial, news and promotional feeds
- ensure that videotapes are available for scheduled recording or production
- set up and operate slow-motion video recording and playback equipment.

During production, VTR operators monitor the sound and picture being recorded and inform the director about malfunctions which could affect the quality of the recorded program. During news productions, they playback all video and sound elements required in the program.

Master control operators monitor, record and playback all signals and programs entering and leaving a station. With the introduction of computerized editing and recording equipment, VTR and master controls are often combined.

Switchers, also known as production switchers or video switchers, work at an electronic console in a control room where they select video sources specified by the director during television videotaping sessions and live broadcasts. Switchers integrate program components from sources such as live cameras, videotape, video servers, and special effects and graphic equipment. In general, switchers:

- program computerized switcher functions
- superimpose on-screen graphics such as titles and credits that are fed from electronic video graphics equipment
- mix or dissolve between sources and insert special effects used to make a transition from one video source to another
- program digital video effects units.

At some television stations, switchers may also direct television productions.

Video editors use linear and non-linear editing systems to blend video recordings together and add video effects, music and audio effects. In general, they:

- set up and operate automated videotape edit controllers and electronic titling units
- operate computer editing systems, video switching equipment and digital video effects units
- assemble raw footage according to scripts or the instructions of a director or producer
- program digital graphic effects
- incorporate audio sound with footage.

Graphics operators, sometimes called electronic video graphics operators or character generator operators, use computer software to generate opening titles, sub-titles and closing credits and may design graphic backgrounds and animations as well. In general, they:

- design lettering and logos
- design other graphics such as clouds or rain for a weather forecast
- capture video pictures and prepare graphic stills
- create and develop graphic art including animation or special effects.

Advancements in graphics technology have made it possible for electronic video graphic operators to produce increasingly sophisticated graphics, including three-dimensional animation.

Working Conditions

Depending on their responsibilities, audio and video equipment operators may work entirely at a station or at various remote locations as well. Most operators work rotating shifts that include afternoons, evenings, weekends and holidays. Coping with tight schedules and deadlines can be stressful.

Personal Characteristics

Audio and video equipment operators need the following characteristics:

- good motor co-ordination
- the ability to remain alert while performing routine, repetitive tasks
- creativity and artistic ability
- excellent communication and interpersonal skills for working with others in a team environment.

They should enjoy using electronic equipment to perform tasks requiring precision and trouble-shooting problems.

Educational Requirements

(section revised FEBRUARY 2006)

Audio and video equipment operators need **related post-secondary education**. In Alberta, the following institutions offer related programs:

- **Canadian School of Modern Broadcasting**, a private vocational school in Edmonton, offers a 17 week Radio Broadcasting program. Applicants must be at least 18 years of age, have a high school diploma with at least 60 per cent in English 30 or 33, or equivalent, and have the approval of the Program Co-ordinator.
- **Grant MacEwan College** in Edmonton offers a two year Digital Arts and Media diploma program. The entrance requirement is a high school diploma with at least 65 per cent in English 30 and Math 30, or equivalent, and successful completion of an accredited Introductory MacIntosh computer course or equivalent.
- **Lethbridge Community College** offers a two year Communication Arts diploma program. The entrance requirement is a high school diploma with at least 60 per cent in English 30 (70 per cent in English 33) at least 60 per cent in Social Studies 30. An interview and a 500 word composition are also required.
- **Mount Royal College** in Calgary offers a two year Broadcasting diploma program. Entrance requirements include a high school diploma or equivalent, keyboarding skills, a portfolio, testing and an interview.
- The **Northern Alberta Institute of Technology** in Edmonton offers a two year Radio and Television diploma program. The entrance requirement is a high school diploma or equivalent with at least 60 per cent in English 30 or 33 and at least 50 per cent in Grade 11 math, science and social studies (grade 12 courses recommended).
- The **Southern Alberta Institute of Technology** in Calgary offers a two year Broadcast Technology diploma program. The entrance requirement is a high school diploma with English 30 or 33 and Pure or Applied Math 30 or equivalent.

Quota programs at public colleges and technical institutes are often oversubscribed so higher than minimum marks are generally required to gain admission.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

(section revised JANUARY 2006)

Audio and video equipment operators work for:

- television networks, speciality channels and local broadcast stations
- film, video and concert production companies
- cable television public access programming channels
- sound recording companies
- video production and editing companies.

Competition is keen in the broadcasting field so inexperienced people should be willing to start at small stations and work in a number of different areas.

Freelancing has become the trend in broadcasting. Increasingly, freelancers are producing programming for new channels as well as existing ones. Contract employment can also be found producing "in-house" programs such as corporate videos (e.g. for safety and technical training, recruiting, sales and marketing). To be successful, freelancers must be talented but also be able to establish a network of contacts and make themselves available when needed. A significant investment in equipment may be required to compete and maintain successful businesses.

Experienced audio and video operators may move into more specialized positions. For example, VTR operators may become VTR editors. Operators may also advance to technical supervisory positions and, if they have the necessary ability and experience, they may eventually become directors or producers.

Television audio and video operators are part of the larger National Occupational Classification 5225: Audio and Video Recording Technicians. In Alberta, over 75 per cent of people employed in this classification work in the **Information, Culture and Recreation** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Information, Culture and Recreation industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 850 Albertans are employed in the Audio and Video Recording Technicians occupational group which is expected to grow 1.7 to 2.7 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 10 to 30 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since television audio and video operators form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for television audio and video operators.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Salaries for audio and video operators vary depending on the size of the operation.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Audio and Video Recording Technicians occupational group working part-time or full-time earned from **$21,500 to $58,600 a year.** The average salary was **$39,200 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Cultural Human Resources Council website: www.culturalhrc.ca

Related Occupational Profiles

Recording Sound Engineer

Related High School Subjects

Communication Technology; Language Arts; Mathematics; Science; and Social Studies

Related Post-Secondary Fields of Study

Communications

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Television Camera Operator

Produced APRIL 2003

Television camera operators operate television cameras and related equipment to record news, live events and productions for television broadcast.

NOC Number(s): 5222
Minimum Education: 2 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: O M I

Duties

Camera operators work in studios and on location. In general, they:

- move the camera and operate the optical controls (e.g. focus, zoom, exposure)
- follow instructions from the director concerning the mood or dramatic effect to be achieved
- make minor electronic adjustments to cameras.

They may also:

- maintain and store camera equipment
- assist with the lighting and staging of broadcast productions
- set up and operate live location shoots.

Electronic news gathering (ENG) and electronic field production (EFP) camera operators use portable cameras to televise and record news events, sports events and reports at remote locations. Camera operators working with ENG or EFP equipment may also set up recording, lighting and playback equipment for field productions. They are responsible for producing the visual content of news items and achieving the desired visual content for commercials or program productions.

Working Conditions

Depending on the size of the broadcast company and studio, camera operators may work alone or as part of a team of camera operators. They may work entirely at a station or at various remote locations as well. Most operators work rotating eight-hour shifts which means that they may be required to work afternoons, evenings, weekends and holidays.

Television camera operators may be required to lift equipment weighing up to 25 kilograms. Coping with tight schedules and deadlines can be stressful.

Personal Characteristics

Television camera operators need the following characteristics:

- excellent motor co-ordination
- good vision and hearing
- stamina (particularly for field work)
- an interest in electronic technology
- the ability to remain alert while performing routine, repetitive tasks and respond to the unexpected quickly
- creativity and artistic ability
- good communication and interpersonal skills for working with others in a team environment.

They should enjoy operating, testing and maintaining camera equipment, and working with others.

Educational Requirements

(section revised MARCH 2005)

A background in journalism is a definite asset for ENG camera operators. Many stations prefer to hire reporters who can shoot and edit their own stories (for more information, see the Reporter occupational profile).

In Alberta, the following institutions offer related post-secondary programs:

- **Grant MacEwan College** in Edmonton offers a two year Digital Arts and Media diploma program. The entrance requirement is a high school diploma with at least 65 per cent in English 30 and Math 30, or equivalent, and successful completion of an accredited Introductory MacIntosh computer course or equivalent.
- **Lethbridge Community College** offers a two year Communication Arts diploma program. The entrance requirement is a high school diploma with at least 60 per cent in English 30 (70 per cent in English 33) at least 60 per cent in Social Studies 30. An interview and a 500 word composition are also required.
- **Mount Royal College** in Calgary offers a two year Broadcasting diploma program. Entrance requirements include a high school diploma or equivalent, keyboarding skills, a portfolio, testing and an interview.
- The **Northern Alberta Institute of Technology** in Edmonton offers a two year Radio and Television diploma program. The entrance requirement is a high school diploma or equivalent with at least 60 per cent in English 30 or 33 and at least 50 per cent in Grade 11 math, science and social studies (Grade 12 courses recommended).
- The **Southern Alberta Institute of Technology** in Calgary offers a two year Broadcast Technology diploma program. The entrance requirement is a high school diploma with English 30 or 33 and Pure or Applied Math 30 or equivalent.

Quota programs are often oversubscribed so higher than minimum marks are generally required to gain admission.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

(section revised JANUARY 2006)

Competition is keen in the broadcasting field so inexperienced camera operators must be willing to start at small stations. Once operators have gained experience in small stations, they can move to positions in larger stations or specialize in a particular type of work.

Freelancing has become the trend in broadcasting. Contract employment can also be found in producing in-house programs such as corporate videos (e.g. for safety and technical training, recruiting, sales and marketing). To be successful, freelancers must be talented but also able to establish a network of contacts and make themselves available when needed. A significant investment in equipment may be required to compete and maintain successful businesses.

Experienced camera operators can advance to technical supervisory positions and, if they have the necessary ability and experience, eventually become directors or producers.

Television camera operators are part of the larger National Occupational Classification 5222: Film and Video Camera Operators. In Alberta, people employed in this classification work in the **Information, Culture and Recreation** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Information, Culture and Recreation industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 600 Albertans are employed in the Film and Video Camera Operators occupational group which is expected to grow 1.1 to 2.1 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover. (**Note**: Since television camera operators form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for television camera operators.) Sophisticated automated equipment is decreasing the need for studio camera operators.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans working part-time or full-time in the Film and Video Camera Operators occupational group earned **up to $67,500 per year.** The average salary was **$31,500 per year**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Cultural Human Resources Council website: www.culturalhrc.ca

Related Occupational Profiles

Cinematographer
Photographer

Related High School Subjects

Communication Technology; Language Arts; Mathematics; Physical Education; Science; and Social Studies

Related Post-Secondary Fields of Study

Communications

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Theatre Director

Produced SEPTEMBER 2003

Theatre directors make artistic decisions about stage productions and consult with producers about everything from selecting the story or idea, the cast and sometimes the crew to overseeing rehearsals.

NOC Number(s): 5131.2
Minimum Education: 4 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: I D S

Duties

Theatre directors may work in many areas, styles and genres of theatre or specialize in one or two. For example, they may specialize in new works, mainstream theatre, collective theatre, musical theatre, popular theatre, theatre for young audiences, movement theatre, issue-based theatre, women's theatre or improvisational theatre. Directors may choose scripts themselves or work with scripts chosen by the people who have hired them.

Theatre directors work collaboratively with set, lighting, costume and sound designers, choreographers, special effects technicians and others. Their responsibilities vary from one production to another but, in pre-production, directors generally:

- study, analyze, interpret and research the script
- audition and engage actors for roles and may participate in the selection of designers as well
- work with designers to determine a stylistic approach for the production
- work with stage managers to arrange schedules for rehearsals, costume fittings and sound/light development
- instruct stage managers regarding management of the show when the director is gone
- work with producers to establish and administer budgets
- work with production managers to meet production needs within budget
- work with technical directors regarding technical requirements
- conduct rehearsals
- consult with publicity agents regarding poster design and notes in the program.

With new works, theatre directors may also consult with playwrights about changes to the script or "workshop" a script by rehearsing it with the playwright and actors to create a final rehearsal draft of the play.

During rehearsals, theatre directors:

- shape the work by describing the emotional, historical and psychological world of the play and guiding actors so the overall production communicates the director's vision
- block actors (tell them how, where and when to move on stage), provide encouragement and make suggestions to help actors interpret characters
- make all final design decisions including lighting, props, furnishings, makeup and hair.

Often a play has one or more dress rehearsals with an audience before opening night. This gives directors one last chance to make changes. When a play opens, the director's job is complete in most cases. However, in small theatre companies, directors may introduce the play and meet with the audience after the show to discuss their interpretation of the play.

Working Conditions

Theatre directors usually rehearse a play for two to four weeks before the first public performance. During this time, they usually work a six-day week of eight-hour days but the last few days before opening night may be longer.

Rehearsals are generally conducted in theatres which may range in size and style from basement rooms to concert halls.

Personal Characteristics

Theatre directors need the following characteristics:

- the communication skills required to convey their vision, energy and enthusiasm to others
- the ability to visualize sets etc. in three dimensions
- the ability to command respect
- the interpersonal skills required to help performers reach their full potential and develop a network of supporters and contacts
- a willingness to accept financial, artistic, psychological and emotional risks
- the ability to manage time and personnel to meet deadlines.

They should enjoy being innovative, controlling and co-ordinating the work of others, and dealing with people.

Educational Requirements

(section revised JUNE 2005)

Many theatre directors are experienced actors or writers. (Sometimes, they wrote the play they are directing.) Some theatre directors are former stage managers. For information about education options in these occupations, see the Actor, Creative Writer and Stage Manager occupational profiles.

The **University of Alberta** in Edmonton and the **University of Calgary** offer two year Master of Fine Arts (MFA) degree programs with a specialization in directing theatre. The entrance requirement is an acceptable average in a four year bachelor's degree program at a recognized institution (or equivalent). Candidates should have a background of training or involvement in theatre practice and sufficient preparation in dramatic literature and theatre history.

In Alberta, the following post-secondary institutions offer **four year** bachelor's degree programs in drama:

- The **University of Alberta**. The entrance requirement is a high school diploma or equivalent with an average of at least 65 per cent in English 30, a 30-level language other than English or Math 30 or Pure Math 30, and three other approved Grade 12 subjects (Social Studies 30 is recommended). The Augustana Faculty in Camrose offers three and four year Bachelor of Arts (BA) degree programs in Drama. The University of Alberta also offers a four year BFA degree program in Technical Theatre.
- The **University of Calgary**. The entrance requirement is a high school diploma or equivalent with an average of at least 72 per cent in English 30 and four of the following subjects: Social Studies 30, Pure Math 30, Applied Math 30, Math 31, Biology 30, Chemistry 30, Physics 30, Science 30, a 30-level language other than English, Drama 30, one five credit Grade 12 subject.
- The **University of Lethbridge**. The entrance requirement is an average of at least 65 per cent in English 30 or English Language Arts 30 and three other appropriate 30-level subjects, plus a fifth Grade 12 subject.

Post-secondary institutions throughout the province offer university transfer programs that allow students to apply up to two years of study toward bachelor's degree programs. **Keyano College** in Fort McMurray offers a two year Drama program. It is the student's responsibility to ensure that the courses they choose to take will be accepted for credit at the institution to which they wish to transfer.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

(section revised JANUARY 2006)

Theatre directors must have five to ten years of related experience as well as related education. Prospective directors should obtain hands-on experience in as many areas of theatre production as possible and make as many contacts as possible in their field.

To gain experience, aspiring theatre directors may:

- offer their services to amateur or school groups
- work as assistants to established directors or producers
- form a small theatre company to produce one or more plays on their own
- enter play festivals (e.g. Fringe Festivals in Edmonton, Saskatoon and Vancouver) with their own productions to showcase their talents.

Most theatres hire artistic directors for a whole season who may, in turn, hire guest directors to direct some plays. There are very few artistic director positions in Canada.

Theatre directors are part of the larger National Occupational Classification 5131: Producers, Directors, Choreographers and Related Occupations. In Alberta, most people employed in this classification work in the **Information, Culture and Recreation** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Information, Culture and Recreation industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 1,950 Albertans are employed in the Producers, Directors, Choreographers and Related Occupations group which is expected to grow 1.2 to 2.2 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 20 to 50 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since theatre directors form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for theatre directors.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Salaries for theatre directors are dependent on experience and reputation. Directors who work on a contract basis negotiate their fees before production begins. In some cases, theatre directors' salaries fall under an agreement set by the Canadian Actors' Equity Association.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Producers, Directors, Choreographers and Related Occupations group working part-time or full-time earned from **$16,200 to $108,800 a year.** The average salary was **$46,800 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Canadian Actors' Equity Association website: www.caea.com

Cultural Human Resources Council website: www.culturalhrc.ca

Related Occupational Profiles

Casting Director
Choreographer
Film Director
Producer - Film, Radio, Television and Theatre
Stage Manager

Related High School Subjects

Communication Technology; Fine Arts (Drama); Language Arts; Languages (other than English); Mathematics; Science; and Social Studies

Related Post-Secondary Fields of Study

Fine Arts and Performing Arts

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Tilesetter

Apprenticeship and Industry Training

Produced FEBRUARY 2006

Tilesetters cover, repair and decorate exterior and interior walls, floors and other surfaces using ceramic, mosaics, marble and quarry tile, slate, stone, terrazzo or granite.

NOC Number(s): 7283
Minimum Education: Apprenticeship Trade - Grade 9
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **O M I**

Duties

Tilesetters who install various types of tile:

- reinforce the surface or build an underbase (if required)
- prepare, measure and mark the surface to be covered
- determine the best layout to achieve the desired pattern in a given space
- cut and trim tiles to cover odd spaces and fit tile around obstacles and openings
- mix, apply and spread adhesives such as mortar, cement, mastic or epoxy over the surface
- set tiles or groups of tiles into position, align the tiles and tap them into place, then
- pack grout (a fine mortar) into joints and remove the excess.

Tilesetters may also:

- install terrazzo surfaces by scattering and rolling marble chips or other aggregates over a mortar base, and polishing it by hand or machine
- cut, surface, polish and install marble and granite
- install pre-cast terrazzo, granite or marble units
- remove and replace cracked or damaged tile
- prepare cost estimates and orders.

Working Conditions

Tilesetters work both indoors and outdoors. There is considerable bending, kneeling and reaching involved in the work. They generally work a five-day, 40-hour week, but overtime may be required to meet construction deadlines. There is also some risk of injury when working with sharp edges, power tools and from heavy lifting.

Tilesetters may be required lift materials, equipment and tools items weighing over 25 kilograms.

Personal Characteristics

Tilesetters need the following characteristics:

- manual dexterity
- the ability to complete tile installation projects working from architectural plans and specifications
- the ability to do precision work
- the ability to work with little supervision.

They should enjoy creating products that require precise skills.

Educational Requirements

To work in Alberta, tilesetters must be ONE of the following:

- registered apprentices
- certified journeymen
- working for an employer who is satisfied that they have the skills and knowledge expected of certified

journeymen
- self-employed.

To **register** with **Alberta Apprenticeship and Industry Training**, apprentices must:
- have at least an Alberta Grade 9 education (or equivalent) or pass an entrance exam
- find a suitable employer who is willing to hire and train an apprentice. Most employers prefer to hire high school graduates and may select apprentices from the local area.

The **term of apprenticeship** is three years (three 12-month periods) that include a minimum of 1,600 hours of on-the-job training and eight weeks of technical training in the first and second year and a minimum of 1,600 hours of on-the-job training in the third. High school students can become apprentices and gain credits toward apprenticeship training and a high school diploma at the same time through the Registered Apprenticeship Program (RAP).

Applicants who have related training or work experience may be eligible for credit or certification.

Technical training is arranged by Alberta Apprenticeship and Industry Training and is currently offered at the Southern Alberta Institute of Technology (SAIT) in Calgary.

Pre-employment programs for prospective apprentices and continuing education programs for journeymen may be offered on an as needed basis by the institution(s) listed above or other schools.

Employment and Advancement

Tilesetters are employed by special trade, building and general contractors. Those who are self-employed usually contract their services for smaller renovation projects.

Many tilesetters stay in the trade until they retire. Others advance to supervisory positions such as foreman or superintendent. Alberta certified journeyman tilesetters who have the supervisory or management skills required by industry may apply for an Achievement in Business Competencies Blue Seal by contacting Alberta Apprenticeship and Industry Training.

In Alberta, most people employed as tilesetters work in the **Construction** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:
- trends and **events** affecting overall employment (especially in the Construction industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

About 950 Albertans are employed in the Tilesetters occupational group which is expected to grow 1.7 to 2.7 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 10 to 30 **new** positions will be created each year **in addition** to job openings created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Apprentice tilesetters earn at least 60 per cent of the journeyman wage rate in their place of employment in the first year, 70 per cent in the second and 80 per cent in the third. According to the Alberta Provincial Apprenticeship Committee for this trade, journeyman wage rates vary, but generally range from **$18 to $28 an hour plus benefits** (2004 estimate).

According to the **2005 Alberta Wage and Salary Survey**, Albertans with three years of experience working part-time or full-time in the Tilesetters occupational group earned from **$37,400 to $56,200 a year.** The average salary was **$42,200 a year**.

Other Sources of Information

Alberta Apprenticeship and Industry Training website: www.tradesecrets.org

Alberta Construction Industry "Trade Up!" website: www.careersconstruction.com

Calgary Construction Association website: www.cca.cc

Construction Sector Council website: www.csc-ca.org

Related Occupational Profiles

Bricklayer
Concrete Finisher
Floorcovering Installer
Glazier
Lather-Interior Systems Mechanic
Plasterer

Related High School Subjects

Construction Technologies; Mathematics; and Physical Education

Related Post-Secondary Fields of Study

Trades, Industrial and Related Training

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Tool and Die Maker

Apprenticeship and Industry Training

Produced FEBRUARY 2006

Tool and die makers build and repair the special tools, metal moulds and patterns used in manufacturing.

NOC Number(s): 7232.1
Minimum Education: Apprenticeship Trade - Grade 11
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **O I M**

Duties

Tool and die makers use precision metal-working machines and hand tools to build, repair and modify custom-made prototypes, tools (e.g. jigs, fixtures, gauges, dies, moulds, press tools) and small mechanical devices.

Duties vary from one position to another but, in general, tool and die makers:

- plan the project, working from blueprints, models or verbal instructions
- choose, measure and mark metal stock or castings
- use a variety of machine tools to machine parts to close tolerances, and may apply heat treatments
- check the accuracy of their work and assemble the parts
- test the completed device for proper operation.

Working Conditions

Tool and die makers usually work indoors in tool rooms or machine shops. They generally work a 40-hour week with some overtime required to meet production schedules. Shift work may be required. There may be some risk of injury when working with power tools and from flying bits of metal.

Tool and die makers may be required to lift items weighing up to 25 kilograms.

Personal Characteristics

Tool and die makers need the following characteristics:

- the ability to work quickly, patiently and accurately
- phsycial strength and stamina
- good mechanical ability
- the ability to visualize a finished product
- logical reasoning ability.

They should enjoy doing precision work and decision-making.

Educational Requirements

To work in Alberta, tool and die makers must be ONE of the following:

- registered apprentices
- certified journeymen
- working for an employer who is satisfied that they have the skills and knowledge expected of certified journeymen
- self-employed.

To **register** with **Alberta Apprenticeship and Industry Training**, apprentices must:

- have at least an Alberta Grade 11 education with Math 10 or 13, Applied Math 10 or Pure Math 10 (or equivalent) or pass an entrance exam pass an entrance exam
- find a suitable employer who is willing to hire and train an apprentice. Most employers prefer to hire high school graduates and may select apprentices from among their current employees. Tool and die workers also require a good understanding of metallurgy.

The **term of apprenticeship** is four years (four 12-month periods) that include a minimum of 1,560 hours of on-the-job training and eight weeks of technical training each year. High school students can become apprentices and gain credits toward apprenticeship training and a high school diploma at the same time through the Registered Apprenticeship Program (RAP).

Applicants who have related training or work experience may be eligible for credit or certification.

Tool and die maker apprentices may attempt the Interprovincial Exam in the final period of their apprenticeship training and, if successful, are granted a Red Seal (which is recognized in most parts of Canada).

Technical training is arranged by Alberta Apprenticeship and Industry Training and is currently offered at:

- the Southern Alberta Institute of Technology (SAIT) in Calgary
- the Northern Alberta Institute of Technology (NAIT) in Edmonton.

Pre-employment programs for prospective apprentices and continuing education programs for journeymen may be offered on an as needed basis by the institution(s) listed above or other schools.

Employment and Advancement

Tool and die makers are employed in industries that manufacture metal working machinery, tools and dies, automobiles, aircraft, electrical machinery, fabricated metal products and plastics.

Most tool and die makers are employed in central Canada. Few become tool designers or open their own tool and die shops.

Experienced tool and die makers may advance to supervisory positions. Alberta certified journeyman tool and die makers who have the supervisory or management skills required by industry may apply for an Achievement in Business Competencies Blue Seal by contacting Alberta Apprenticeship and Industry Training.

In Alberta, over 75 per cent of people employed as tool and die makers work in the following industries:

- **Metals, Metal Fabricaton and Machinery Manufacturing**
- **Other Manufacturing**
- **Oil and Gas Extraction**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 350 Albertans are employed in the Tool and Die Makers occupational group which is expected to grow 1.7 to 2.7 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Tool and die makers who are experienced with computer-controlled machine tools may have an advantage when seeking employment.

Salary

Apprentice tool and die makers earn at least 55 per cent of the journeyman wage rate in their place of employment in the first year, 65 per cent in the second, 75 per cent in the third and 85 per cent in the fourth. According to the Alberta Provincial Apprenticeship Committee for this trade, journeyman wage rates vary, but generally range from **$16 to $22 an hour plus benefits** (2005 estimate).

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Tool and Die Makers occupational group working part-time or full-time earned an average salary of **$38,300 a year**.

Other Sources of Information

Alberta Apprenticeship and Industry Training website: www.tradesecrets.org

Related Occupational Profiles

Industrial Designer
Machinist
Millwright
Plastics Processing Technician

Related High School Subjects

Construction Technologies; Design Studies; Fabrication Studies; Mathematics; and Physical Education

Related Post-Secondary Fields of Study

Trades, Industrial and Related Training

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Tour Guide

Produced JUNE 2003

Tour guides escort individuals or groups of people on tours and describe points of interest.

NOC Number(s): 6441.1
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: S M d

Duties

In general, tour guides:

- greet tourists and describe the content and length of the tour
- conduct people on tours of cities, local points of interest, historical sites or establishments such as legislative buildings, cathedrals, bars or wineries
- provide information about the area, related events, features and facts of interest to the group
- answer questions and distribute information/promotional materials
- ensure that tourists follow applicable safety regulations and rules of conduct
- implement emergency evacuation procedures should the need arise.

Tour guides may also:

- operate transportation vehicles (e.g. buses, boats or limousines) as well as provide a running commentary
- find out as much as possible about the groups they will be guiding beforehand to select points of interest and provide commentary appropriate for the age and interests of the group.

Step-on tour guides frequently work with out-of-town coach drivers who may be unfamiliar with local sightseeing routes. Step-on guides must know the local routes and traffic disruptions (e.g. road construction), and be able to provide clear, timely directions as well as narrate the tour.

Establishment or on-site tour guides escort visiting groups through facilities such as museums, art galleries, night clubs, industrial plants, historical sites or public buildings. In addition to the duties listed above, they may:

- interpret history and culture as it relates to the site
- assist with reception or office administration duties
- escort or drive visitors to their destinations
- show audiovisual presentations or select appropriate music
- conduct educational activities for specific groups (e.g. school children or people whose first language is not English).

For information about guides who escort groups on holiday tours, see the Travel Guide occupational profile. For information about mountaineering, hunting and fishing guides, see the Outdoor Sport/Recreation Guide occupational profile.

Working Conditions

Tour guides may be on their feet for much of the working day, pointing out spots of interest and answering questions. They may work irregular hours, including evenings and weekends, and may have to work through meal times. They may work on a volunteer, part-time, seasonal or contract basis.

Personal Characteristics

Tour guides need the following characteristics:

- the ability to create a friendly, enthusiastic atmosphere
- the ability to communicate effectively with groups of different sizes and ages
- knowledge related to the nature of the tours they conduct

- the ability to respond to unexpected situations quickly and effectively (first aid training is recommended)
- a good memory for details
- lots of patience.

They should enjoy meeting and talking to people and sharing information.

Educational Requirements

Tour guides employed on a full-time basis must be mature. Summer guiding positions are often filled by university students. Knowledge of the history of the area or establishment or subjects related to the tour (e.g. art, crafts, horticulture, ethnic cultures), and the ability to speak more than one language are definite assets. Some employers require applicants to have CPR and standard first aid training.

Tour guides are **trained on the job.** After an initial training period, some companies require tour guides to pass an examination to ensure that company standards are met.

Other Requirements

Guides who operate vehicles must have **appropriate licenses** and may be tested again as part of the job interview process.

Employment and Advancement

(section revised JANUARY 2006)

Tour guides may be volunteers, or employed by tour operators or the organizations that own or operate the facilities concerned. They may be employed full-time, only for the summer months or part-time on a year-round basis.

Experienced tour guides may advance to supervisory positions but advancement opportunities are generally limited and require the ability to train new guides.

Tour guides are part of the larger National Occupational Classification 6441: Tour and Travel Guides. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Management, Administrative and Other Support Services**
- **Information, Culture and Recreation**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- time of year (for seasonal jobs)
- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 350 Albertans are employed in the Tour and Travel Guides occupational group which is expected to grow 1.5 to 2.5 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover. (**Note**: Since tour guides form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for tour guides.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Tour and Travel Guides occupational group working part-time or full-time earned from **$14,300 to $47,100 a year.** The average salary was **$27,800 a year.**

Other Sources of Information

Alberta's Training for Excellence Corporation website: www.atec.ca

Related Occupational Profiles

Casino Dealer
Heritage Interpreter
Outdoor Sport/Recreation Guide
Travel Guide

Related High School Subjects

Agriculture; Communication Technology; Community Health; Fine Arts (Drama; Music; and Visual Arts); Forestry; Language Arts; Languages (other than English); Social Studies; Tourism Studies; and Wildlife

Related Post-Secondary Fields of Study

Driver Training; and Personal and Food Services

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Toxicologist

Produced FEBRUARY 2005

Toxicologists investigate the possible harmful effects on living things of chemical agents (e.g. drugs, pesticides, food additives), physical agents (e.g. ionizing and electro-magnetic radiation) and biological agents (e.g. plant and animal toxins).

NOC Number(s): 2121.2
Minimum Education: 4 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **I O D**

Duties

Toxicologists investigate the hazards of chemical, physical and biological agents at different levels of exposure. Their goal is to improve industrial safety, and public and environmental protection through a better understanding of the hazards to which living species are exposed.

In general, toxicologists:

- conduct laboratory studies on substances (e.g. drugs, food additives, solvents, herbicides) or on energy (e.g. radiation) to determine their effects on laboratory animals, plants and human tissue
- conduct research to develop new tests for use in toxicological studies
- evaluate potential risks based on levels and periods of exposure
- analyze and evaluate data gathered from studies and reliable scientific publications to determine appropriate controls for various chemical and physical hazards
- develop standards or guidelines for safe levels of chemical and physical agents in workplaces, air, food or drinking water
- provide advice and scientific information to policy and program developers concerning the health and legal aspects of chemical use
- supervise and co-ordinate the activities of technologists and technicians.

Analytical toxicologists specialize in detecting natural products such as venoms or plant poisons, toxic man-made chemicals and the metabolites of ingested substances.

Clinical (biomedical) toxicologists work in medical environments or pharmaceutical companies investigating the effects of drugs or other chemicals on the human body. They may be part of a medical team responding to emergencies such as drug overdoses, or they may monitor drug therapies for patients who have certain types of diseases (e.g. epilepsy or asthma).

Environmental toxicologists study the effects of chemical, physical and biological agents on humans and other organisms, and determine levels of toxins in the environment.

Forensic toxicologists examine post-mortem tissues for drugs and poisons in deaths that are suspicious, unexpected or for which there is no anatomical cause. They are concerned with the medical and legal aspects of impairment or death related to drugs, including alcohol, and often testify in court. Forensic toxicologists may also assist in training police in the operation of breath testing equipment.

Industrial toxicologists test new products (e.g. pesticides, drugs) for manufacturers to determine a product's toxicity during production (for industrial workers) and use (for consumers).

Nutritional toxicologists test food additives and new food products, and investigate interactions of additives with nutrients in foods to determine their safety for consumers.

Regulatory toxicologists develop appropriate controls for safe uses of new chemical products such as industrial chemicals, agricultural chemicals, pharmaceuticals and cosmetics.

Risk assessment toxicologists study the possible consequences of exposure to toxicants and develop guidelines for safe exposure levels.

Veterinary toxicologists investigate health problems or non-infectious diseases of unknown cause in animals, usually domestic or zoo species.

Working Conditions

Toxicologists work in offices, laboratories, industrial facilities and outdoors. Testing new products often involves conducting experiments on animals or studies on "in vitro" preparations (including isolated cells), and using sophisticated equipment such as atomic absorption spectrometers, mass spectrometers, electron microscopes, flow cytometers and chromatography systems. Toxicologists must pay careful attention to safety procedures when handling toxic materials and substances of unknown toxic potential. Safety procedures vary with the task and may require simple protection (gloves and mask) to full body suit and the use of an isolated room.

Toxicologists may work alone or in teams. Some overtime may be necessary for work that requires strict time schedules. Travel may be required to collect field samples, testify at hearings or in court, respond to emergencies or crisis situations, or attend scientific meetings.

Personal Characteristics

Toxicologists need the following characteristics:

- the perseverance and intellectual ability required to think critically and answer complex questions
- patience and an eye for detail
- the ability to be organized and methodical in their work
- the ability to work well alone or as part of a team
- an understanding of why live animals are sometimes used for testing.

They should enjoy synthesizing information and solving problems, working with instruments and equipment at tasks requiring precision, and directing the work of others.

Educational Requirements

The minimum education requirement for toxicologists is an appropriate **bachelor's degree.** Most toxicologists have advanced (master's or doctoral) degrees in toxicology or a related area. A doctoral (PhD) degree is usually required to direct and administer research programs or to teach at the college or university level.

Different specializations require different academic backgrounds. For example, veterinary toxicologists must become veterinarians first, then take an advanced degree in toxicology.

Toxicology is an interdisciplinary science which draws from diverse fields including biology, chemistry, biochemistry, pharmacology, mathematics, physiology, pathology, immunology and genetics.

In Alberta, no post-secondary institution offers a full program in toxicology. However, courses in toxicology are offered at:

- **Concordia University College of Alberta** in Edmonton in a Bachelor of Environmental Health (After Degree) program.
- the **University of Alberta** in Edmonton in a graduate degree program in Occupational Medicine, Department of Public Health Sciences, Faculty of Medicine; in both bachelor's and graduate degree programs in the Department of Pharmacology, Faculty of Medicine and Dentistry; and in the bachelor's degree program in the Faculty of Pharmacy and Pharmaceutical Sciences.
- the **University of Calgary** in a bachelor's degree program in Environmental Sciences.

In Canada, degree programs in toxicology are often interdisciplinary programs which may be offered jointly by more than one faculty or department at the same post-secondary institution. Admission requirements for bachelor's degree programs therefore vary but generally include a high school diploma with 30 level courses in English, chemistry, biology and math. Some post-secondary institutions base admission to their toxicology programs on students' grade point averages in a previous year of university studies. Prior to enrolling in any program, prospective students are strongly advised to discuss their academic qualifications and career plans with faculty members at the post-secondary institution(s) of their choice.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

(section revised JANUARY 2006)

Toxicologists are employed by pharmaceutical and food manufacturers, biotechnology companies, governments, universities, hospitals, research centres and consulting firms. A few work in the chemical and petrochemical industries. Some positions are funded by "soft money" which is obtained by applying to granting agencies and are therefore temporary.

Salary increases and growing research and advisory responsibilities are the most tangible forms of advancement in this occupation. There are relatively few administrative and supervisory positions.

Toxicologists are part of the larger National Occupational Classification 2121: Biologists and Related Scientists. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Professional and Technical Services**
- **Public Administration**
- **Health Care and Social Assistance**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

About 1,100 Albertans are employed in the Biologists and Related Scientists occupational group which is expected to grow 1.3 to 2.3 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 10 to 30 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since toxicologists form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for toxicologists.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Employment growth is best for environmental toxicologists and environmental risk assessment toxicologists.

Salary

(section revised SEPTEMBER 2005)

Toxicologists' salaries vary depending on their qualifications and the nature of their work.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Biologists and Related Scientists occupational group working part-time or full-time earned from **$17,000 to $99,400 a year.** The average salary was **$64,600 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Society of Toxicology of Canada (STC) website: www.stcweb.ca

Related Occupational Profiles

Agrologist
Biologist
Biotechnologist
Chemist
Ecologist
Food Scientist
Forensic Laboratory Analyst
Geneticist
Microbiologist
Pharmacologist
Physiologist

Related High School Subjects

Agriculture; Community Health; Foods; Forestry; Language Arts; Mathematics; Science (Biology; and Chemistry); and Wildlife

Related Post-Secondary Fields of Study

Agriculture and Related Technologies; Environment, Forestry and Related Studies; Health Care and Medical Sciences; Human Ecology, Fashion and Food Sciences; and Sciences

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For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Traffic Co-ordinator

Produced MAY 2003

Traffic co-ordinators prepare daily program logs (listings of the programming, including commercials, that will be put on the air on particular broadcast days) in the radio and television industry.

NOC Number(s): 1473
Minimum Education: High school diploma
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **M I s**

Duties

Duties vary from one station to another but, in general, traffic co-ordinators:

- create daily logs by entering information supplied by station program and sales departments and the national network concerning programming and commercial air time sold
- enter the times and length of regular news, sports, traffic and weather reports, commercials and station identifications, regularly scheduled and special programs and, at some stations, public service announcements
- juggle commercials, program promotions and short fill programs to fit into available time and separate commercials for the same or similar products
- ensure suitability for audiences and time slots and that daily logs follow broadcast guidelines set by the Canadian Radio-television and Telecommunications Commission
- keep the sales department informed about commercial air time still available in each broadcast day.

Although work usually begins on program logs weeks in advance of the broadcast days concerned, additions and deletions may be made right up until air time.

Before the broadcast day, traffic co-ordinators retrieve the log from the computer and distribute copies to all appropriate station personnel. Depending on the station, traffic co-ordinators may also give a copy of the log to the station's accounting department for billing purposes, or prepare billing information themselves.

In some stations, traffic co-ordinators have additional responsibilities such as dealing with media schedulers and buyers from advertising agencies or handling contest prizes and give-aways.

Working Conditions

Traffic co-ordinators work standard office hours in an office environment. Handling volumes of detailed work and dealing with last-minute changes can be stressful.

Personal Characteristics

Traffic co-ordinators need the following characteristics:

- the ability to get along well with many different people
- the ability to do detailed work efficiently and ensure that each day's program log is accurate and complete
- a good memory
- good organizational skills
- the ability to work under the pressure of constant deadlines.

They should enjoy coordinating and monitoring the flow of information in a station or agency, operating computerized systems and dealing with people.

Educational Requirements

Traffic co-ordinators need **a high school diploma.** A high school business education program with courses in keyboarding, business mathematics and bookkeeping is a definite asset. Most employers prefer to hire people who already have a working knowledge of computers, Windows software and word processing programs.

Some employers require applicants to have training or experience in radio and television broadcasting. For information about post-secondary programs in broadcasting, see the Announcer occupational profile.

Employment and Advancement

(section revised JANUARY 2006)

Traffic co-ordinators are employed by:

- radio and television stations
- advertising agencies
- media sales companies.

Television traffic operations are generally centralized in large urban centres.

Many smaller organizations have only one employee, a traffic manager, working on the program log. These organizations generally prefer to hire people who have some previous broadcast experience or at least some previous clerical experience. At stations where there are only a few commercials to be logged, the traffic manager may also be the station's bookkeeper or secretary-receptionist.

Experienced traffic co-ordinators can become traffic managers or move into other departments such as accounting.

Traffic co-ordinators are a small part of the larger National Occupational Classification 1473: Production Clerks. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Other Manufacturing**
- **Metals, Metal Fabrication and Machinery Manufacturing**
- **Oil and Gas Extraction**
- **Wholesale Trade**
- **Construction**
- **Transportation and Warehousing**
- **Retail Trade**
- **Health Care and Social Assistance**
- **Petrochemicals, Rubber, Plastics and Chemicals Manufacturing**
- **Mineral Products Manufacturing**
- **Management, Administrative and Other Support Services**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 1,450 Albertans are employed in the Production Clerks occupational group which is expected to grow 1.1 to 2.1 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 10 to 40 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since traffic co-ordinators form only a small part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for traffic co-ordinators.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Production Clerks occupational group working part-time or full-time earned from **$14,500 to $193,700 a year.** The average salary was **$37,900 a year.**

However, in general, salaries for traffic co-ordinators are not as high as they are for other types of production clerks.

Other Sources of Information

(section revised JULY 2003)

Canadian Radio-television and Telecommunications Commission website: www.crtc.gc.ca

Related Occupational Profiles

Dispatcher

Related High School Subjects

Financial Management; Information Processing; Language Arts; Management and Marketing; Mathematics; and Social Studies

Related Post-Secondary Fields of Study

Clerical and Administrative Support; and Communications

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Traffic Manager

Produced OCTOBER 2003

Traffic managers direct and co-ordinate the transportation of incoming materials from suppliers or raw material sources and outgoing products to distribution houses and customers.

NOC Number(s): 0713.1
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: **D M s**

Duties

Duties and responsibilities may vary from one position to another but, in general, traffic managers:

- manage transportation costs and provide the transportation service levels required to meet company objectives
- schedule the dispatching of goods and track goods in transit (or supervise others who perform these tasks)
- prepare and control transportation budgets
- negotiate with various carriers (air, water, rail, road or pipeline), maintain their own private fleet or a combination of both
- develop systems for operations analysis
- train employees and administer safety programs
- supervise specialists such as rate clerks and claims supervisors
- develop transportation policy and write procedures
- evaluate locations for new warehouses and distribution networks
- evaluate freight costs and the inventory costs associated with transit times.

In smaller organizations, traffic managers may also:

- personally monitor shipments
- co-ordinate deliveries
- issue shipping instructions
- provide routing information
- trace and expedite shipments
- do customs work, including meeting trade requirements
- advise sales and billing departments of transportation charges for customers' accounts
- lease or buy new equipment
- arrange for storage facilities when required
- maintain a vehicle fleet to safe standards and acceptable levels of cleanliness.

Working Conditions

Traffic managers usually work in an office environment. Depending on the size and nature of the organization, they may have to do some travelling. In large organizations, they may be required to work shifts because goods must be shipped seven days a week, 24 hours a day.

It is not unusual for traffic managers to work overtime, often under pressure. Regardless of weather conditions or mechanical breakdowns, they must make sure that shipments reach customers on time and in good condition.

Personal Characteristics

Traffic managers need the following characteristics:

- the ability to analyze information
- strong decision-making skills
- sound business judgement

- a good memory for details
- the ability to work quickly and accurately with figures
- good verbal and written communication skills
- creative problem-solving abilities.

They should enjoy co-ordinating information and directing the work of others, taking a methodical approach to monitoring and planning operations, and negotiating with service providers, workers and other managers.

Educational Requirements

There is no standard education requirement for traffic managers. However, employers generally prefer to hire job applicants who have **post-secondary education related to commerce or business administration plus related work experience.** Strong computer skills are essential.

Certificate, diploma and degree programs in business administration and management are offered by post-secondary institutions throughout Alberta. Entrance requirements vary depending on the program and the institution. However, in general, the entrance requirement for:

- one year certificate and two year diploma programs is a high school diploma or equivalent with Grade 12 English and math.
- four year degree programs in commerce or management is an average of at least 70 per cent in English 30, Pure Math 30 (or equivalent) and three other approved or specified Grade 12 subjects (e.g. 30-level sciences or languages other than English).

The **Canadian Institute of Traffic and Transportation** offers continuing education courses and a ten-course Diploma in Distribution Logistics Management program. Successful completion of the diploma program and a minimum of five years of work experience in the field leads to the professional designation CITT. The continuing education program is intended for the ongoing professional development of Institute members.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

(section revised JANUARY 2006)

Traffic managers are employed by:

- transport companies (truck, rail, courier)
- raw material suppliers
- manufacturing firms
- chain stores or other large businesses that distribute large volumes of goods
- government departments and agencies.

Those who have no previous training or related experience may start in supporting positions such as rate clerk, route clerk, shipper/receiver or warehouse technician. Those who have related post-secondary education may start in positions of greater responsibility.

Advancement opportunities depend on the size and nature of the organization and the individual's performance and qualifications.

Traffic managers are part of the larger National Occupational Classification 0713: Transportation Managers. In Alberta, over 75 per cent of people employed in this classification work in the **Transportation and Warehousing** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Transportation and Warehousing industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

About 2,450 Albertans are employed in the Transportation Managers occupational group which is expected to grow 2.2 to 3.2 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 50 to 80 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since traffic managers form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for traffic managers.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised SEPTEMBER 2005)

Salaries for traffic managers vary widely depending on the industry, the responsibilities of the position and the background of the manager.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Transportation Managers occupational group working part-time or full-time earned from **$21,700 to $130,400 a year.** The average salary was **$61,000 a year.**

Other Sources of Information

Canadian Institute of Traffic and Transportation website: www.citt.ca

Related Occupational Profiles

Operations Manager
Truck Driver

Related High School Subjects

Information Processing; Language Arts; Languages (other than English); Logistics; Management and Marketing; Mathematics; and Science

Related Post-Secondary Fields of Study

Business, Management and Administrative Studies

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Translator

Produced MARCH 2005

Translators convert written text from one language to another, sometimes changing the structure of the original text but without changing the meaning.

NOC Number(s): 5125.1
Minimum Education: 4 years post-secondary education/training
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: **M I d**

Duties

The process of translating from one language to another often includes:

- conducting research before beginning the actual translation
- compiling terminology information
- revising, editing, proof-reading and checking translated material.

Translators generally convert texts into their mother tongue. To meet tight deadlines, they sometimes work in teams, each person translating a different part of the same text. This requires ensuring consistency of terminology through all revisions.

Translators may use a variety of reference materials, including:

- dictionaries and lexicons
- glossaries
- computerized terminology banks and encyclopaedias
- general correspondence and reports
- miscellaneous documents such as parallel texts
- technical specifications
- manuals and educational textbooks.

In alphabetical order, the most commonly translated languages in Canada are:

- Chinese
- English
- French
- German
- Japanese
- Russian
- Spanish.

Working Conditions

Particularly when there are rush jobs, translators may work long hours to meet deadlines.

Personal Characteristics

Translators need the following characteristics:

- inquisitiveness and an interest in researching information in new areas
- the ability to pay close attention to details for extended periods of time
- a willingness to work long hours when required to meet deadlines.

They should enjoy transcribing and analyzing text, and determining the most appropriate adaptation from one language to another.

Educational Requirements

(section revised JULY 2005)

Translators need the following knowledge and skills:

- mastery of both source and target languages
- excellent linguistic capabilities
- knowledge of current affairs
- an understanding of the fundamentals of business, technology and law
- knowledge of word processing, desktop publishing and spreadsheet programs
- knowledge of the latest electronic resources for translators.

The recommended educational route for those interested in becoming translators is to obtain an undergraduate degree in one or more languages, followed by completion of a specialized program in translation. The best practical training for translators is to spend a considerable length of time living in the culture of the targeted language.

European standards for translators require at least two or more languages in addition to their mother tongue. Studying or living in Europe is excellent preparation for translating with international organizations.

In Alberta, many post-secondary institutions offer courses in various languages. The following institutions offer full programs in one or more languages or other programs related to interpretation:

- **Athabasca University** offers three and four year Bachelor of Arts (BA) degree programs in French by distance education. Applicants must be at least 16 years of age and live in North America.
- **Concordia University College of Alberta** in Edmonton offers a three year BA program in French. The entrance requirement is an average of at least 60 per cent in English 30 and four other appropriate 30 level subjects.
- The **University of Alberta** in Edmonton offers
    - Bachelor of Arts (BA) programs in Germanic Languages (German, Scandinavian, Norwegian), Latin, Romance Languages (French, Italian, Portuguese, Spanish), Slavic languages (Polish, Russian and Ukrainian), and East Asian Languages (Chinese and Japanese). The entrance requirement is an average of at least 65 per cent in English 30, a 30-level language other than English and three other appropriate 30-level subjects (Social Studies 30 recommended). Some of these programs are offered in Camrose.
    - a certificate in Translation Studies in French, German and Spanish (which can be obtained while completing BA requirements).
    - programs in French and French-Canadian through the Faculte St-Jean. All instruction is in French.
    - master's and doctoral (PhD) degree programs with a specialization in translation. The admission requirement is an acceptable average in a related four year bachelor degree (or equivalent) program.
- The **University of Calgary** offers four year and five year (co-op) BA degree programs in French, German, Russian and Spanish. The entrance requirement is a high school diploma or equivalent with an average of at least 70 per cent in English 30 and four of the following: Social Studies 30, Pure Math 30, Applied Math 30, Math 31, Biology 30, Chemistry 30, Physics 30, Science 30, a language 30 other than English and one five credit Grade 12 subject.
- The **University of Lethbridge** offers four year degree programs in French, German and Spanish. The entrance requirement is an average of at least 65 per cent in English 30 and three other appropriate 30 level subjects plus a fifth Grade 12 subject.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

In Canada, programs specifically in translation are offered by:

- **College Universitaire de St. Boniface** in Winnipeg
- **Laurentian University** in Sudbury
- the **University of Ottawa** in Ottawa.

Some translation courses are offered by distance education.

Other Requirements

Certification through the Association of Translators and Interpreters of Alberta (ATIA) is recommended because it shows clients that translators have met national standards and are bound by a code of ethics. Candidates for ATIA membership must pass an exam administered by the Canadian Translators, Terminologists and Interpreters Council (CTTIC). Exams are held yearly in Edmonton and Calgary. Junior translators can become associate members of the ATIA.

Employment and Advancement

(section revised JANUARY 2006)

Translators may be employed by or provide freelance services to:

- private translation firms and corporations
- educational institutions
- federal and provincial governments.

They may be employed full-time or part-time, or work on a fee-for-service basis.

Freelance translators may work on a variety of documents including:

- international trade publications
- news articles
- books
- industry manuals
- legal documents
- technical or scientific reports or articles
- radio and television scripts
- information related to entertainment, banking or medicine.

Translators also may work as terminologists or revisers. Some freelance translators work for clients in other parts of the world via electronic communications. Advancement generally takes the form of building a more extensive client base.

Translators are part of the larger National Occupational Classification 5125: Translators, Terminologists and Interpreters. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Professional and Technical Services**
- **Public Administration**
- **Educational Services**
- **Information, Culture and Recreation**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- the translator's combination of languages
- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 700 Albertans are employed in the Translators, Terminologists and Interpreters occupational group which is expected to grow 2.2 to 3.2 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 10 to 30 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since translators form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for translators.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Freelance translators work on a contract basis on specific projects and may be paid by the word. Annual incomes therefore vary from one translator to another, and may vary from one year to another.

According to the **2005 Alberta Wage and Salary Survey**, part-time or full-time starting salaries for Albertans working in the Translators, Terminologists and Interpreters occupational group ranged from **$17,100 to $33,700 a year.** After three years, salaries ranged from **$35,800 to $41,900**. The average salary was **$35,600 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Association of Translators and Interpreters of Alberta (ATIA) website: www.atia.ab.ca

Canadian Translators, Terminologists and Interpreters Council (CTTIC) website: www.cttic.org

Related Occupational Profiles

Interpreter
Linguist
Sign Language Interpreter

Related High School Subjects

Communication Technology; Information Processing; Language Arts; Languages (other than English); Legal Studies; Mathematics; Science; and Social Studies

Related Post-Secondary Fields of Study

Humanities and Languages

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Transport Refrigeration Technician

Apprenticeship and Industry Training

Produced FEBRUARY 2006

Transport refrigeration technicians install, repair and maintain equipment that supplies and contains conditioned air in mobile units which transport perishable goods such as food and medical supplies.

NOC Number(s): 7313
Minimum Education: Apprenticeship Trade
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: O M I

Duties

Duties vary from one position to another but, in general, transport refrigeration technicians:

- assemble and install refrigeration components such as motors, compressors and gauges
- measure and cut piping, and connect piping
- read wiring diagrams, and install and calibrate related controls
- test lines to detect leaks
- recharge systems with refrigerant and perform routine maintenance checks
- service and repair two-, three- and four-cylinder diesel engines and related parts
- repair and replace parts and components, and overhaul entire refrigeration systems.

Working Conditions

Transport refrigeration technicians sometimes work in cold, cramped conditions. They usually work a 40-hour week but overtime may be required for emergency repairs. There may be some risk of injury when working with electricity, gases under high pressure and hazardous gases.

Transport refrigeration technicians may be required to lift items weighing over 25 kilograms.

Personal Characteristics

Transport refrigeration technicians need the following characteristics:

- mechanical ability
- good co-ordination and manual dexterity
- the ability to work well with co-workers
- good customer service skills
- the ability to keep up to date with changing technology.

They should enjoy problem-solving and working with little supervision.

Educational Requirements

To work in Alberta, transport refrigeration technicians must be ONE of the following:

- registered apprentices
- certified journeymen
- working for an employer who is satisfied that they have the skills and knowledge expected of certified journeymen
- self-employed.

To **register** with **Alberta Apprenticeship and Industry Training**, apprentices must:

- have at least an Alberta high school transcript with Math 20 or 23, Applied Math 20 or Pure Math 20, and English 20 or 23 and Science 20, Biology 20, Physics 20, or Chemistry 20 (or equivalent) or pass an entrance exam
- find a suitable employer who is willing to hire and train an apprentice. Most employers prefer to hire high school graduates and may select apprentices from among their current employees.

The **term of apprenticeship** is three periods (three 14-month periods) that include a minimum of 1,800 hours of on-the-job training and eight weeks of technical training each period. High school students can become apprentices and gain credits toward apprenticeship training and a high school diploma at the same time through the Registered Apprenticeship Program (RAP).

Applicants who have related training or work experience may be eligible for credit or certification.

Technical training is arranged by Alberta Apprenticeship and Industry Training and is currently offered at the Southern Alberta Institute of Technology (SAIT) in Calgary.

Pre-employment programs for prospective apprentices and continuing education programs for journeymen may be offered on an as needed basis by the institution(s) listed above or other schools.

Employment and Advancement

Transport refrigeration technicians are employed by large transport companies, organizations such as food wholesalers that operate their own fleet of transport vehicles, and firms specializing in transport refrigeration maintenance and repair work.

Experienced transport refrigeration technicians may advance to supervisory positions. Alberta certified journeyman transport refrigeration technicians who have the supervisory or management skills required by industry may apply for an Achievement in Business Competencies Blue Seal by contacting Alberta Apprenticeship and Industry Training.

Transport refrigeration mechanics are part of the larger National Occupational Classification 7313: Refrigeration and Air Conditioning Mechanics. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Construction**
- **Metals, Metal Fabrication and Machinery Manufacturing**

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 2,250 Albertans are employed in the Refrigeration and Air Conditioning Mechanics occupational group which is expected to grow 1.4 to 2.4 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 30 to 60 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since transport refrigeration mechanics form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for transport refrigeration mechanics.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Apprentice transport refrigeration technicians earn at least 60 per cent of the journeyman wage rate in their place of employment in the first period, 75 per cent in the second and 90 per cent in the third. According to the Alberta Provincial Apprenticeship Committee for this trade, journeyman wage rates vary, but generally range from **$18 to $26 an hour plus benefits** (2005 estimate).

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Refrigeration and Air Conditioning Mechanics occupational group working part-time or full-time earned from **$19,300 to $82,400 a year.** The average salary was **$55,700 a year.**

Other Sources of Information

Alberta Apprenticeship and Industry Training website: www.tradesecrets.org

Related Occupational Profiles

Mechanical Engineering Technologist
Railway Car Mechanic
Refrigeration and Air Conditioning Mechanic

Related High School Subjects

Design Studies; Electro-Technologies; Fabrication Studies; Language Arts; Mathematics; Mechanics; Physical Education; and Science (Physics)

Related Post-Secondary Fields of Study

Trades, Industrial and Related Training

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Travel Consultant

Produced FEBRUARY 2005

Travel consultants represent travel suppliers. They advertise, promote and sell a wide variety of travel services to the public.

NOC Number(s): 6431
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus below average occupational growth in Alberta
Interests: **S M I**

Duties

In general, travel consultants:

- describe and sell travel destinations, products and services to clients
- access information about costs, routes and schedules from a variety of print references and computer databases
- make reservations using telephone, fax, mail, computerized systems and the Internet
- issue required documentation such as tickets, travel insurance policies and itineraries
- notify customers about changes in travel plans and required documentation
- calculate and prepare invoices and accept payment from customers.

When routes or schedules change or other factors create the need to alter customer travel plans, travel consultants must be able to quickly make the necessary adjustments.

Travel agencies may earn commissions by selling the services of suppliers such as:

- transportation companies (e.g. airlines, motor coach companies, railway passenger services, cruise lines and car rental companies)
- accommodation facilities (e.g. hotels and resorts)
- cruiselines
- travel wholesale and tour companies offering package holidays
- other travel services (e.g. travel insurance).

Working Conditions

Travel consultants work in travel agencies located in towns or cities. Most of their time is spent behind a desk consulting with clients or completing paperwork. They are often subject to time pressures and must work overtime during peak travel periods or when travel plans change.

Personal Characteristics

Travel consultants are sales representatives who are responsible for encouraging customers to return and use the services of their agency again. Therefore, they must be able to:

- deal with all types of people patiently and pleasantly
- serve customers quickly and efficiently
- handle stressful situations calmly and effectively.

They should enjoy working with people and promoting travel products, performing detailed work and taking a methodical approach to compiling information and operating computerized systems.

Educational Requirements

(section revised DECEMBER 2005)

Travel consultants need:

- well-developed sales abilities
- mathematical skills
- a good memory
- typing and computer skills
- excellent organizational abilities
- knowledge of worldwide geography.

Travel consultants should have at least a high school diploma. Travel agencies generally prefer to hire people who have post-secondary education in travel-related courses or programs. The following are definite assets when prospective travel consultants are looking for employment:

- sales experience
- travel experience
- fluency in a second language
- office experience.

Travel-related post-secondary programs are offered throughout the province:

- The **CDI College of Business, Technology and Healthcare,** a private vocational school in Calgary and Edmonton, offers a 29 week Travel and Tourism program. The entrance requirement is a high school diploma with English 30 or 33, or equivalent.
- **Grant MacEwan College** in Edmonton offers a one year (accelerated) Travel diploma program. The entrance requirements are a high school diploma with at least 65 per cent in English 30 (or at least 75 per cent in English 33) and at least 65 per cent in Pure Math 20 or Applied Math 30 (or equivalent), good communication skills and knowledge of geography.
- **Medicine Hat College** offers a one year Travel and Tourism certificate program by distance and non-distance education. The entrance requirement for the certificate program is a high school diploma with English 30 or 33 and Math 13, or equivalent.
- The **Southern Alberta Institute of Technology (SAIT)** in Calgary offers a Travel and Tourism diploma program by distance and non-distance education. The entrance requirement is a high school diploma or equivalent with English Language Arts 30-1 or 30-2 (or English 30 or 33).
- **Training Inc.**, a private vocational school in Lethbridge, offers a 26 week Tourism and Travel Sales program. The entrance requirement is a high school diploma with Grade 12 English and Math 10 (or any Grade 11 math) or equivalent.

For current information on specific programs and mature student admission, please check post-secondary calendars or websites.

Continuing education programs are often offered on an as needed basis.

Prospective students are strongly advised to discuss their career and education plans with people employed in the travel industry befor enrolling in an education program.

Other Requirements

Canadian Institute of Travel Counsellors (CITC) certification is voluntary. Applicants for travel counsellor certification should:

- take an endorsed training program
- pass two examinations
- complete ongoing education through industry-based training programs
- provide proof of current full-time employment with a recognized travel agency or travel service supplier
- obtain membership with their professional association.

To sell travel insurance, travel consultants must complete insurance company training.

Employment and Advancement

(section revised JANUARY 2006)

Travel consultants are employed by:

- retail travel agencies
- wholesale tour companies
- transportation and tourism companies
- travel insurance companies
- hotel chains
- government tourist boards.

The qualifications required for employment vary considerably from one employer to another. Inexperienced workers may start in clerical positions, and take night courses or in-service training while they are gaining experience. Although travel industry certification is not compulsory, some employers prefer to hire people who are certified.

Advancement depends on the travel consultant's sales ability and initiative, and the size of the company. Some experienced travel consultants open their own travel agencies.

In Alberta, over 75 per cent of people employed as travel consultants work in the **Management, Administrative and Other Support Services** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Management, Administrative and Other Support Services industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 2,650 Albertans are employed in the Travel Consellors occupational group which is expected to grow up to 0.9 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Salaries, working conditions and travel benefits vary greatly from one employer to another. Many travel agencies are on incentive plans where wages are based on sales productivity.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Sales Travel Counsellors occupational group working part-time or full-time earned from **$18,300 to $74,100 a year.** The average salary was **$32,800 a year.**

Depending on their agency's sales performance, travel consultants may qualify for reduced rates for air, cruise and hotel arrangements. Consultant educational tours are offered to travel agencies by suppliers, and consultants usually attend one tour per year.

Other Sources of Information

(section revised JULY 2005)

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Aboriginal Tourism Team Canada website: www.attc.ca

Alberta Tourism Education Council (ATEC) website: www.atec.ca

Association of Canadian Travel Agencies (ACTA) website: www.acta.ca

Canadian Institute of Travel Counsellors (CITC) website: www.citc.ca

Tourism Work Web website: www.tourismworkweb.com

Related Occupational Profiles

Flight Attendant
Travel Guide

Related High School Subjects

Communication Technology; Information Processing; Language Arts; Languages (other than English); Management and Marketing; Mathematics; Social Studies; and Tourism Studies

Related Post-Secondary Fields of Study

Business, Management and Administrative Studies

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Travel Guide

Produced MAY 2003

Travel guides escort individuals or groups of people on holiday tours.

NOC Number(s): 6441.2
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **S M d**

Duties

Duties and responsibilities vary but, in general, travel guides:

- point out places of interest on a tour
- verify and confirm previously made transportation, meal and accommodation arrangements and resolve any problems that may arise
- look after the special needs of people on the tour
- answer questions
- evaluate services received on the tour and report to tour organizers.

Travel guides who operate on a freelance basis (are not employees of wholesale tour operations) may also:

- organize and promote tours
- pay bills and record cheques issued
- sell travel packages
- facilitate reservations from clients.

Some travel guides also operate transportation vehicles (e.g. buses, boats or limousines).

For information about local tour guides or mountaineering, hunting and fishing guides, see the Tour Guide and Outdoor Sport/Recreation Guide occupational profiles.

Working Conditions

Travel guides are often on their feet for most of the day, pointing out spots of interest and answering questions. While on tour, they work long hours, including evenings and weekends and are on call 24 hours a day. The work is sometimes seasonal.

Most travel guides regularly lift suitcases weighing up to 25 kg.

Personal Characteristics

Travel guides need the following characteristics:

- maturity
- good problem solving skills and the ability to respond to unexpected situations calmly, quickly and effectively (first aid training is recommended)
- the ability to create a friendly, enthusiastic atmosphere
- the ability to communicate effectively with large groups and also be responsive to individual needs
- knowledge of the facilities and services at major stops on the tour as well as geography and history relevant to the tour
- a good memory for details
- lots of patience and a genuine interest in all kinds of people.

They should enjoy meeting and talking to people, travelling and taking care of travel arrangements and resolving problems. They should have no personal commitments that would interfere with frequent travel.

Educational Requirements

There are no standard minimum education requirements for travel guides but most employers prefer to hire applicants who have post-secondary education or years of related experience.

Travel guides need some knowledge of the travel industry (e.g. air travel routines, Customs regulations) and the cultures of the regions they visit, and should be at least 21 years of age so they can accompany groups on night club tours. Experience working with the public and a second language are definite assets.

Travel guides **may be trained on the job or have related post-secondary education.** For information about related post-secondary programs, see the Travel Consultant occupational profile.

Other Requirements

Travel guides who operate vehicles must have **appropriate licenses** and may be tested again as part of the job interviewing process.

Employment and Advancement

(section revised JANUARY 2006)

Some travel guides are employed by tour/travel companies on a temporary basis, usually from March to October and December to March. Those employed on a full-time basis may assist in a travel office when not on tour. Some travel guides are self-employed and some volunteer their services in return for free trips.

Guides may advance to supervisory positions after several years of experience but advancement opportunities are generally limited.

Travel guides are part of the larger National Occupational Classification 6441: Tour and Travel Guides. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Management, Administrative and Other Support Services**
- **Information, Culture and Recreation**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- time of year (for seasonal jobs)
- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 350 Albertans are employed in the Tour and Travel Guides occupational group which is expected to grow 1.5 to 2.5 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover. (**Note**: Since travel guides form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for travel guides.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Pay rates for those employed on a temporary basis range from **$100 to $200 per day plus accommodation, meal and travel expenses (2003 estimates).** Tips from satisfied tour members may add considerably to tour guides' incomes.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Tour and Travel Guides occupational group working part-time or full-time earned from **$14,300 to $47,100 a year.** The average salary was **$27,800 a year.**

Other Sources of Information

Cultural Human Resources Council website: www.culturalhrc.ca

Related Occupational Profiles

Outdoor Sport/Recreation Guide
Tour Guide
Travel Consultant

Related High School Subjects

Community Health; Language Arts; Languages (other than English); Logistics; Management and Marketing; Physical Education; Social Studies; Tourism Studies; and Wildlife

Related Post-Secondary Fields of Study

Business, Management and Administrative Studies; Communications; Driver Training; Education and Library Studies; Environment, Forestry and Related Studies; Humanities and Languages; Physical Education and Recreation; and Social Sciences, Law and Religious Studies

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For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Truck Driver

Produced OCTOBER 2003

Truck drivers operate gasoline or diesel-powered trucks, tractor-trailers and similar vehicles to transport goods and materials over local routes or long distances.

NOC Number(s): 7411.1
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **M O d**

Duties

Duties and responsibilities vary from one position to another but, in general, truck drivers:

- operate trucks and sometimes maneuver them in tight spaces
- routinely inspect brakes, tires, lights, horns, and cooling and refrigeration equipment before leaving the warehouse or terminal
- load trucks to maximize the use of space and distribute weight accordingly, and to ensure safety on the road
- secure cargo on the truck and place protective padding around articles to prevent damage during transit
- conduct security checks and inspections en route
- make emergency roadside adjustments and repairs
- follow local and interprovincial highway safety regulations
- have the weight of the entire unit checked as directed by weighing officials at highway scales
- keep records of loads delivered and picked up, arrival and departure times, and maintain vehicle log books (fuel consumption, mileage).

Some truck drivers specialize in operating special types of vehicles such as:

- heavy trucks for overweight loads
- tank trucks which transport bulk liquids
- gravel trucks
- tractor-trailers (two or more vehicles hooked together)
- industrial trucks (involving special equipment)
- garbage trucks (for more information, see the Refuse Truck Driver occupational profile)
- log and muskeg trucks
- extended length vehicles.

Many truck drivers are owner-operators who own their own vehicles and lease their services and trucks to other companies.

Working Conditions

Truck drivers often work long hours, primarily behind the wheel. They drive in all kinds of weather, traffic and road conditions.

Truck drivers' work loads and schedules vary depending on the goods being transported and the distances travelled. Some **local truck drivers** start out in the morning with a loaded truck and make deliveries all day, returning with an empty truck to the warehouse or plant at the end of the day. With other products such as lumber, local drivers may return to the yard to reload after each delivery.

Long distance truck drivers move goods between cities and across the continent. They often work long hours and travel at night. On relatively short runs, drivers may transport loaded trailers to nearby cities, pick up different loads for the return trip, and return to their starting points in the same day. On longer runs, drivers may be away for a week or longer. Sitting for long periods of time can be hard on the back.

Depending on the products being transported, truck drivers may or may not be responsible for loading and unloading the truck. If the driver is expected to unload, there may be a helper to assist with the job. Loading and unloading may require lifting over 25 kilograms.

Personal Characteristics

Truck drivers need the following characteristics:

- good health and vision
- the ability to learn how to use the on-board computer devices commonly used in the transportation industry
- the ability to remain alert and maintain a high level of concentration
- good interpersonal skills and a customer service orientation
- good judgement and the ability to react quickly in emergency situations
- the mechanical ability required to make minor repairs.

They should enjoy taking a methodical approach to recording information and obtaining required documentation, driving and talking to others involved in loading and receiving shipments.

Educational Requirements

Truck drivers must have **air brakes certification** and should have at least Grade 10 English reading and writing skills. Employers may require drivers to have first aid and CPR certification, WHMIS (Workplace Hazardous Materials Information System) training, TDG (Transportation of Dangerous Goods) training or H2S Alive training.

Drivers who haul to the United States must be at least 21 years of age and able to pass U.S. drug testing requirements. Employers generally prefer to hire drivers who do not have a criminal record, have no more than six demerits and are insurable at a reasonable cost (25 years of age or older).

Truck drivers must be able to maneuver trucks th ough narrow streets and alleys, into tight parking spaces, and up to loading docks. In Alberta, a system of **Classified Driver Licensing** sets strict requirements for handling specific types of trucks and combination vehicles, in addition to rigid medical standards. Trucking companies can only hire drivers who have qualified under this system.

Many people get started in the trucking industry by taking training courses offered by public colleges or private truck driving schools. Program length, content, costs and admission requirements vary. Before enrolling in a program, prospective students should visit several schools and compare their facilities for classroom instruction, the vehicles used for instruction and the qualifications of the instructors. Another good way to evaluate a school is to talk to former students and ask local trucking companies if they hire graduates from that school.

Applicants for a Class 1 license must be at least 18 years of age and have a valid Alberta class 5 driver's licence. Truck driving schools may require students to also have a clear driving record or minimum number of demerits or a medical examination.

Employment and Advancement

(section revised JANUARY 2006)

Truck drivers may work as employees or self-employed contractors for:

- transportation companies
- manufacturing and distribution companies
- retail outlets
- moving companies.

Some trucker drivers start work in entry-level jobs such as yard worker, dock handler, checker or clerk and advance to driving positions after they acquire the required operator's license and a driving position becomes available.

Many local drivers and a few long distance drivers have regularly assigned runs. Drivers who work for smaller companies are more likely to be assigned regular runs early in their employment. In large companies, drivers usually start on the "extra board" where they bid for runs on the basis of seniority.

Once they have gained some truck driving experience, drivers may be assigned to long haul or highway driving. As long as their driving records remain acceptable and they maintain good health, they can continue driving as long as they wish. They may also move into related areas such as operations (freight handling, dock supervision, dispatching) or communications (tracking the movement of shipments and trucks). Drivers who have business knowledge and skills may choose to purchase their own trucks or fleet of trucks.

In Alberta, over 75 per cent of people employed as truck drivers work in the following industries:

- **Transportation and Warehousing**
- **Construction**
- **Oil and Gas Extraction**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 40,050 Albertans are employed in the Truck Drivers occupational group which is expected to grow 1.5 to 2.5 per cent each year from 2005 to 2010 in Alberta. It is forecasted that over 600 **new** positions will be created each year **in addition** to job openings created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Wages in the trucking industry vary, depending on the type of work, load and vehicle.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Truck Drivers occupational group working part-time or full-time earned from **$15,200 to $109,100 a year.** The average salary was **$49,200 a year.**

Other Sources of Information

(section revised JUNE 2005)

Alberta construction industry "Trade Up! " website: www.careersconstruction.com

Careers in Transportation website: www.transpocity.ca

Related Occupational Profiles

Bus Driver
Chauffeur
Driving Instructor
Messenger/Courier
Municipal Recycling Truck Driver
Refuse Truck Driver
Surface Mining Equipment Operator
Taxi Driver
Traffic Manager
Vending Machine Route Worker

Related High School Subjects

Community Health; Language Arts; Mechanics; and Physical Education

Related Post-Secondary Fields of Study

Driver Training

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Turfgrass Management Specialist

Produced MARCH 2005

Turfgrass management specialists maintain and manage grass and related areas and facilities, and assist in the design and construction of landscape projects.

NOC Number(s): 2225.2
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **O M D**

Duties

In general, turfgrass management specialists:

- plan, organize and direct the establishment and maintenance of turfgrass areas and associated plant materials and irrigation systems
- schedule maintenance activities to accommodate customer activities and events
- follow integrated pest management practices to identify and control problems created by insects, rodents, pest bird species, plant diseases and weeds
- determine the type and quantity of grass varieties to grow
- maintain good public relations with users of the facility
- hire, train and supervise staff and maintain personnel records
- prepare and manage budgets, and ensure the cost effectiveness of maintenance activities
- order plant material, supplies and equipment to ensure adequate inventory
- oversee the maintenance, servicing and replacement of turfgrass or grounds machinery
- schedule, maintain and repair irrigation systems
- keep records
- assist in the planning and development of golf courses, parks, lawn bowls, athletic fields and related lands.

Turfgrass management specialists may supervise crews of employees who perform the following duties or perform some tasks themselves:

- spread top soil, lay sod, seed and mulch grass
- plant shrubs, trees or annual flowers
- amend soil and install drainage systems if required
- mow, aerate, rake, edge, topdress, fertilize and irrigate turf
- gather litter and remove garbage
- apply pesticides to turf to control insects, weeds, rodents, pest birds and disease
- maintain pathways, ponds and irrigation systems (including winterizing them and starting them up in spring).

Turfgrass management specialists also may:

- own and operate turfgrass/landscape contracting and maintenance businesses
- work as consultants or sales representatives in the turfgrass industry
- manage commercial sod production businesses.

Working Conditions

Turfgrass management specialists work indoors and outdoors year-round. They often work long, irregular hours during the warmer months.

The work can be strenuous including lifting items weighing up to 25 kilograms. Turfgrass management specialists must observe safety precautions to reduce the health risks associated with handling fertilizers and pesticides.

Personal Characteristics

Turfgrass management specialists need the following characteristics:

- the ability to adapt to new situations and solve problems
- good communication skills in person and in writing
- the ability to work as part of a team
- mechanical aptitude
- a willingness to work with their hands.

They should enjoy supervising the work of others, working with people and operating equipment.

Educational Requirements

(section revised FEBRUARY 2006)

In Alberta, the following institutions offer post-secondary education programs that are directly related to turfgrass management:

- **Medicine Hat College** offers a one year Horticultural Technician certificate program with a specialization in turfgrass management in collaboration with Olds College. The entrance requirement is at least 55 per cent in Grade 12 English and Grade 11 math, biology and chemistry.
- The **Northern Alberta Institute of Technology** in Fairview offers a two year Golf Course Turfgrass Management Technology diploma program that has a 16 week work experience component between the first and second year. The entrance requirement is a high school diploma with Grade 11 English, science and math. NAIT also offers one year Turfgrass Equipment Technician, Horticulture Technician, Irrigation Technician, Precision Applicator Technician, and Sportsfields/Parks Technician certificate programs in Fairview.
- **Olds College** offers a two year Turf Grass Management diploma program. The entrance requirement is a high school diploma with at least 55 per cent in English Language Arts 30-1 or 30-2, and Grade 11 math, biology and chemistry. Olds College also offers a Bachelor of Applied Science degree program with a specialization in golf course management. The entrance requirement is a two year diploma from Olds College or equivalent.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Other Requirements

Depending on the type of operation they work for and the type of pesticides they use, turfgrass management specialists may be required to hold a Landscape Alberta Pesticide Applicator Certificate from Lakeland College.

Employment and Advancement

(section revised JANUARY 2006)

Turfgrass management specialists are employed by:

- federal, provincial, regional and municipal government departments and private organizations that manage recreational facilities such as golf courses and athletic fields
- organizations with large real estate holdings such as condominium complexes, school districts, post-secondary institutions, industrial parks, airports and cemeteries
- turfgrass machinery, chemical and seed companies
- landscape contracting firms
- sod farms.

Some positions are seasonal.

In the past, many turfgrass management specialists worked their way up from labouring positions to supervisory positions. Now, graduates of related post-secondary education programs have a better chance of advancement than those who do not have related academic training.

Experienced turfgrass management specialists may advance to supervisory positions such as golf course superintendent or start their own landscape contracting firms. Advancement may require relocating to successively larger communities.

Turfgrass management specialists are part of the larger National Occupational Classification 2225: Landscape and Horticultural Technicians and Specialists. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Management, Administrative and Other Support Services**
- **Professional and Technical Services**
- **Agriculture**
- **Information, Culture and Recreation**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation**.

About 1,050 Albertans are employed in the Landscape and Horticultural Technicians and Specialists occupational group which is expected to grow 1.5 to 2.5 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 10 to 30 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since turfgrass management specialists form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for turfgrass management specialists.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised SEPTEMBER 2005)

Salaries for turfgrass management specialists vary considerably depending on their education, experience, location and responsibilities.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Landscape and Horticultural Technicians and Specialists occupational group working part-time or full-time earned from **$14,600 to $83,100 a year.** The average salary was **$39,900 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Environment Pesticide Management Program website: www.gov.ab.ca/env/protenf/pesticide/

Landscape Alberta Nursery Trades Association website: www.landscape-alberta.com

Professional Lawn Care Association of America (PLCAA) website: www.plcaa.org

The Lawn Institute/Turfgrass Producers International website: www.lawninstitute.com

Related Occupational Profiles

Arborist
Landscape Architectural Technologist
Landscape Gardener
Recreation Facility Operator

Related High School Subjects

Agriculture; Language Arts; Mathematics; Physical Education; Science (Biology; and Chemistry); and Wildlife

Related Post-Secondary Fields of Study

Agriculture and Related Technologies

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Underground Miner

Produced AUGUST 2005

Underground miners use different types and sizes of equipment to extract minerals from beneath the earth's surface and construct mine tunnels, passageways and shafts.

NOC Number(s): 8231
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus below average occupational growth in Alberta
Interests: **O I M**

Duties

In general, underground miners:

- use specialized equipment to drill and blast rock, and remove waste rock during mine development
- use trucks, conveyor belts, hoists and other equipment to move rock to the surface
- develop mines by installing ground support, mine services (air and water), ventilation and equipment such as conveyor belts.

The mining methods and equipment used to recover minerals vary with the type and location of the ore. Underground miners may operate:

- trackless, self-propelled, rubber-tired or track-mounted drilling or mucking machines
- continuous mining machines
- tunnel-boring machines
- raise climbers
- cutting equipment
- loading machines
- shearers or plows
- conveyor equipment
- haulage trucks
- load-haul-dump vehicles such as scooptrams
- de-watering equipment such as pumps
- line-of-site remote control mining equipment
- tele-remote mining equipment.

There are basically four types of underground miners:

- drift miners work in lateral tunnels called drifts
- raise miners develop veritcal tunnels called raises
- stope miners extract ore
- shaft miners create the initial access downward in a shaft access mine.

Working Conditions

Underground miners usually work eight or 12 hour shifts including evenings, weekends and holidays. Overtime may be required to meet production deadlines.

Technological advances in all areas of mining have significantly improved working conditions but safety precautions are still required when using machinery and equipment. Other occupational hazards include flying particles, blast and exhaust fumes, dust, falling rock, water in-rushes, explosive methane gas (primarily in coal mining) and potential rock bursts. All underground miners must wear protective equipment such as steel-toed boots, gloves, hard hats, dust masks, glasses and hearing protection. They may be routinely required to lift items weighing up to 25 kilograms.

Personal Characteristics

Underground miners need the following characteristics:

- good hand-eye co-ordination to effectively and safely operate equipment
- good hearing and eyesight
- reasonable strength, agility and endurance
- the spatial perception required to judge distances
- a concern for safety
- no fear of closed, small or narrow spaces.

They should enjoy operating equipment, and having clear rules and organized methods for their work.

Educational Requirements

There are no standard education requirements for underground miners. Employers generally prefer to hire applicants who have a high school diploma or related experience (e.g. operating or maintaining heavy equipment). Anyone working underground must be 18 years of age or older.

Employers provide on the job training including an orientation to mine operations, safety and health. The training period varies in length but generally takes one to three years.

Employment and Advancement

(section revised JANUARY 2006)

Most of the underground miners employed in Alberta work in coal mines. They usually start as helpers. With experience and on the job training, they may advance to working with larger, more complicated equipment and possibly to supervisory positions. General mining experience is considered essential to advance to higher positions.

In some jurisdictions, underground miners must pass an annual medical examination.

Underground miners are part of the National Occupational Classification 8231: Underground Production and Development Miners. In Alberta, over 75 per cent of people employed in this classification work in the **Mining** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Mining industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 1,400 Albertans are employed in the Underground Production and Development Miners occupational group which is expected to grow up to 0.5 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

In 2003, Albertans working in the Underground Production and Development Miners occupational group earned an average salary of **$50,700 a year** (2003 Alberta Wage and Salary Survey).

Other Sources of Information

Human Resources and Skills Development Canada, Essential Skills profile for Underground Mine Service and Support Workers: www15.hrdc-drhc.gc.ca/english/profiles/117.asp

Related Occupational Profiles

Blaster
Heavy Equipment Operator
Safety Officer
Surface Mining Equipment Operator

Related High School Subjects

Energy and Mines; and Physical Education

Related Post-Secondary Fields of Study

Driver Training; and Trades, Industrial and Related Training

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Unit Clerk

Produced OCTOBER 2005

Unit clerks perform a variety of reception, clerical and administrative tasks at nursing stations on the units or wards of hospitals, continuing care centres and other medical facilities.

NOC Number(s): 1243
Minimum Education: High school diploma
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: **S O d**

Duties

Unit clerks are responsible for maintaining an orderly nursing station and assisting nursing staff by:

- assembling standard forms for patient charts
- routinely checking patient discharge documents for omissions and signatures and distributing admission and discharge forms and charts to the appropriate departments
- processing physicians' instructions by recording information on requisition forms, consent forms, chart forms and computerized systems
- co-ordinating and scheduling patient tests and treatments with internal departments and external centres, arranging for patient transportation and contacting patients to advise them of admission, discharge and appointment dates
- greeting, screening and directing visitors, and distributing flowers, mail and packages
- answering the telephone, relaying messages and transferring calls
- performing other clerical functions such as preparing staff time sheets, updating patient census and room lists, filing documents and cards, and requisitioning office and patient care supplies
- preparing and submitting health care billings for procedures, treatments and services on behalf of physicians.

Working Conditions

Unit clerks generally work day and evening shifts in hospitals and other health care facilities but may be required to work weekends and nights on some wards. Hours are being extended with changes in health care delivery and staff utilization patterns.

Ongoing exposure to the emotional stress that illness or injury causes patients and their families can be stressful for unit clerks. They work in very busy environments, constantly interacting with other people.

Unit clerks are routinely required to lift items weighing up to 10 kilograms.

Personal Characteristics

Unit clerks need the following characteristics:

- good organizational skills
- good communication skills
- the ability to work efficiently despite frequent interruptions
- emotional maturity and the ability to handle stress
- the ability to maintain patient confidentiality
- good interpersonal skills especially the ability to deal effectively with difficult behaviours sometimes exhibited by people in distress.

They should enjoy working with people, operating computer and related equipment, and compiling information.

Educational Requirements

(section revised NOVEMBER 2005)

Employers generally prefer to hire graduates of recognized unit clerk training programs that include a course in medical terminology and a practicum (work experience) component. Applicants who have equivalent qualifications may be considered.

In Alberta, the following post-secondary institutions offer unit clerk training programs:

- **Academy of Learning**, a private vocational school in Airdrie, Calgary, Edmonton, High River and Red Deer, offers a 51 week Medical Office Assistant program with a Unit Clerk Specialty. The entrance requirement is a high school diploma or equivalent.
- **Bow Valley College** in Calgary offers a 21 week Hospital Unit Clerk certificate program that includes a four week practicum. The entrance requirement is at least three Grade 11 subjects including English 20 or 23, or a GED, and a typing speed of at least 20 words per minute. Standardized testing is required. Graduates of this program may apply for advanced credit toward the college's Medical Office Assistant, Dental Receptionist or Hospital Admitting Clerk programs.
- **HCC Choice College**, a private vocational school in Spruce Grove, offers a 25 week Medical Clinical Assistant program with a unit clerk specialization. The entrance requirement is a high school diploma with Grade 12 English and Math 10 or any Grade 11 math, or equivalent.
- **Lethbridge Community College** offers a 19 week Unit Clerk program that includes a three week practicum. The entrance requirement is a high school diploma or equivalent with at least 60 per cent in English Language Arts 30-1 or 65 per cent in ELA 30-2, and a typing speed of at least 30 words per minute.
- **NorQuest College** in Edmonton offers 21 week Hospital Unit Clerk program that includes a four week practicum. The entrance requirement is 60 per cent in English Language Arts 30-1 or 65 per cent in ELA 30-2, and a new keyboarding speed of 20 words per minute.
- **Prestwick College**, a private vocational school in Calgary offers a 32 week Unit Clerk program. The entrance requirement is a high school diploma with Grade 12 English and math, or equivalent.
- **Red Deer College** offers a 22 week Unit Clerk program. The entrance requirement is three Grade 11 subjects including English 20 or 23 or equivalent, and a typing speed of at least 20 words per minute. A medical history plus immunization is also required.

Students may be required to submit medical histories, immunization records or criminal record checks prior to practicum placement.

Other post-secondary institutions that offer medical or clerical daytime programs may offer related evening courses. For information about medical office assistant programs, see the Medical Secretary occupational profile. Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

(section revised JANUARY 2006)

Unit clerks are employed in hospitals, continuing care facilities and rehabilitation institutions. Full-time job openings for unit clerks are sometimes filled by other hospital employees such as part-time unit clerks or licensed practical nurses.

Applicants for employment are required to undergo a police security clearance.

In large organizations, experienced unit clerks may advance to clerical co-ordinator positions or move into other clerical and administrative support occupations.

Unit clerks are part of the larger National Occupational Classification 1243: Medical Secretaries. In Alberta, most people employed in this classification work in the **Health Care and Social Assistance** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Health Care and Social Assistance industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 3,100 Albertans are employed in the Medical Secretaries occupational group which is expected to grow 2.1 to 3.1 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 60 to 100 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since unit/ward clerks form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for unit/ward clerks.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Medical Secretaries occupational group working part-time or full-time earned from **$12,400 to $51,800 a year.** The average salary was **$25,100 a year.**

For information about current collective agreements in the public and not-for-profit sectors, see the Health Sciences Association of Alberta (HSAA) website.

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Health Sciences Association of Alberta (HSAA) website: www.hsaa.ca

Related Occupational Profiles

Administrative Assistant
Health Information Management Professional
Medical Secretary
Medical Transcriptionist

Related High School Subjects

Community Health; Language Arts; Management and Marketing; Mathematics; and Physical Education

Related Post-Secondary Fields of Study

Clerical and Administrative Support; and Health Care and Medical Sciences

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For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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University Professor

Produced NOVEMBER 2005

University professors are employed by degree-granting institutions to teach and produce works of art or conduct research and *publish their research findings*.

NOC Number(s): 4121
Minimum Education: 8 + years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **I D S**

Duties

University professors are scholars recognized in the academic community for their research and teaching, and professional publications or works of art. Their duties vary but, in general, they:

- conduct research studies and publish their findings and theoretical/professional perspectives, or create or perform works of art
- plan and teach university courses
- prepare, administer and mark student assignments and examinations
- advise students regarding course and academic matters
- supervise graduate students
- represent their universities as speakers, guest lecturers, consultants and resource personnel
- participate in university governance.

Professors also may have other duties such as:

- analyzing and evaluating subject information to determine course requirements
- organizing and co-ordinating curriculum and course schedules
- advising students regarding academic requirements and options
- serving on committees concerned with curriculum revision, academic planning, degree requirements and faculty matters.

Working Conditions

Professors working with undergraduate students may have classes of over 200 students. In these very large classes, there may be very little personal interaction between the students and the professor. However, professors also may teach senior undergraduate and graduate level courses that rarely exceed 20 students in size and are usually seminars or tutorials.

Most professors work long hours, year round. When classes are in session, classroom teaching takes approximately 9 to 12 hours a week, preparation for teaching takes up to three hours for every hour of instruction time, and grading and evaluating course assignments takes approximately 9 to 12 hours a week. Professors are expected to use the periods in which they are not teaching, generally the spring or summer months, to pursue research activities. Many universities occasionally grant professors study leaves (sabbaticals) to assist in their studies and research.

Personal Characteristics

University professors need the following characteristics:

- a desire to learn and share their knowledge with others
- critical thinking skills
- an aptitude for art or research in a particular discipline
- excellent oral and written communication skills including the ability to present complex, in-depth materials at a student level.

They should enjoy co-ordinating information in innovative ways to prepare teaching materials, supervising and evaluating student progress, and helping others.

Educational Requirements

Almost all university professors have doctoral degrees and are highly regarded for their depth of knowledge and expertise in their fields. They usually hold two or more post-graduate degrees, often obtained with distinction, and have made outstanding and innovative contributions in their fields of study.

Students hoping to become university professors should have records of academic excellence throughout high school, undergraduate and graduate degree programs (often honours programs). The status of a post-graduate degree is often related to the academic prestige and reputation of the university at which it was conferred. This factor may directly affect the success of a graduate competing for a teaching position.

Employment and Advancement*

(section revised JANUARY 2006)

Becoming a professor at a university can be a long and difficult process. Doctoral program graduates often have to move several times from one university to another as term or sessional instructors until they obtain permanent employment and can begin to move up the academic ladder to a full professorship.

Assistant professors, associate professors and professors have similar duties but are differentiated by years of experience, achievement, prestige and level of responsibility. Although five or six years are usually spent at each of the lower levels (assistant and associate) moving towards full professorship, not all assistant professors or associate professors become full professors. Usually, after five years of full-time work, faculty members are considered for tenure (permanent) status which involves a rigorous review of the individual's accomplishments by academic peers.

With experience, university professors may:

- be appointed to sit on various committees or assume a chairmanship or department head position
- work as consultants for government, industry or private businesses
- move from teaching into such senior administrative academic positions as dean, vice-president or president within a university.

In Alberta, university professors work in the **Educational Services** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Educational Services industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 6,400 Albertans are employed in the University Professors occupational group which is expected to grow 1.5 to 2.5 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 90 to 160 **new** positions will be created each year **in addition** to job openings created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Salaries for entry level university positions vary with:

- personal qualifications
- academic qualifications
- administrative responsibilities
- the faculty and university.

Full professors at prestigious universities may earn up to $140,000 a year (2005 estimate).

Other Sources of Information

Canadian Association of University Teachers (CAUT) website: www.caut.ca

Confederation of Alberta Faculty Associations (CAFA) website: www.ualberta.ca/~cafa/

Related Occupational Profiles

College, Technical or Vocational Instructor

Related High School Subjects

Communication Technology; Language Arts; Languages (other than English); Mathematics; Science; and Social Studies

Related Post-Secondary Fields of Study

Agriculture and Related Technologies; Business, Management and Administrative Studies; Communications; Computer and Information Technology; Education and Library Studies; Engineering, Architecture and Related Studies; Environment, Forestry and Related Studies; Fine Arts and Performing Arts; Health Care and Medical Sciences; Human Ecology, Fashion and Food Sciences; Humanities and Languages; Mathematics; Physical Education and Recreation; Sciences; Social Sciences, Law and Religious Studies; and Social, Community and Protective Services

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For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Upholsterer

Produced DECEMBER 2003

Upholsterers cover furniture such as sofas and chairs with fabric, leather and other upholstery materials.

NOC Number(s): 7341
Minimum Education: Less than high school
Employment Outlook: Employment turnover plus below average occupational growth in Alberta
Interests: O M I

Duties

Custom upholsterers usually work in small shops where they make new furniture from standard patterns. They make or, sometimes, rebuild an entire articie of furniture and may help customers choose fabrics and styles. Some highly skilled custom upholsters design and produce furniture according to customer specifications.

Production upholsterers work in factories and usually specialize in one area of new furniture production. They work on an assembly line performing one function and pass the furniture on to others to finish.

Re-upholsterers re-condition old furniture. In general, they:

- remove the old cover and padding
- examine the springing and, if required, replace it with webbing, coil springs or sinuous springs
- build the chair or sofa up with loose fibre stuffing, cotton, felt and/or foam padding
- shape and form the stuffing
- measure and cut fabric to fit each part of the furniture
- shape and mark fabric for sewing
- sew fabric and cushions
- fit the fabric to the furniture
- staple or sew the fabric in place.

Re-upholsterers also repair furniture by repairing split seams, replacing broken springs and replacing foam in seat cushions.

Custom upholsterers and re-upholsterers may also prepare cost estimates or refinish wood parts of upholstered furniture.

Working Conditions

Upholstery work requires considerable standing, bending and stooping, and may involve lifting pieces of furniture that weigh up to 25 kilograms.

Upholsters use a variety of hand tools, including measuring tapes, pneumatic staplers, hammers, scissors and pliers and must be careful to avoid injury. They work indoors in shops or factories that are usually well lighted and clean, although sometimes dusty.

Hours of work vary. Production upholsterers usually work shifts. Custom upholsterers and re-upholsterers who own their own shops may work long, irregular hours to meet customer demands.

Personal Characteristics

Upholsterers need the following characteristics:

- excellent manual dexterity and co-ordination
- good vision
- strength and endurance
- motivation
- problem solving skills.

A flair for colour and the creative use of fabrics is an asset.

Upholsterers should enjoy using tools and machinery to perform tasks requiring precision, having clear guidelines and methods for their work and dealing with customers.

Educational Requirements

(section revised SEPTEMBER 2005)

Most upholsterers are **trained on the job.** Mastering all of the skills necessary to work independently takes up to five years.

Production upholsterers begin on the simpler functions in an assembly line and progress to more complex tasks. Custom upholsterers start with routine tasks such as removing old fabric, padding or springs, and move on to more difficult tasks as they gain experience. This training period is reduced for graduates of furniture upholstering programs.

Kwantlen College in Surrey offers a nine month Furniture Upholstery program. The entrance requirements are Grade 10 reading comprehension and math skills as assessed by the College, satisfactory physical health and a good working knowledge of the upholstery trade.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

(section revised JANUARY 2006)

Most production upholsterers are employed in furniture factories. Most custom upholsterers are self-employed or work as employees in small shops that employ fewer than five people. Some upholsterers work for furniture stores and businesses such as:

- hotel chains
- railways
- airlines
- automotive manufacturers.

Experienced upholsterers in large factories may advance to supervisory positions depending on their experience and management ability. Experienced custom upholsterers may open their own shops.

In Alberta, most people employed as upholsterers are work in the **Repair, Maintenance, Personal and Other Services** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Repair, Maintenance, Personal and Other Services industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 1,050 Albertans are employed in the Upholsterers occupational group which is expected to grow up to 0.9 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Inexperienced upholsterers may start at minimum wage. Experienced upholsterers may be paid on per hourly basis in custom shops or on a piecework basis in factories, depending on the employer and the kind of work.

The upholstery business is extremely competitive and the profits made by self-employed custom upholsterers depend largely on market conditions and their upholstery skills, business skills and reputation.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Upholsterers occupational group working part-time or full-time earned from **$16,000 to $42,000 a year.** The average salary was **$25,600 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Related Occupational Profiles

Automobile Accessories Installer
Cabinetmaker

Related High School Subjects

Construction Technologies; Language Arts; Mathematics; and Physical Education

Related Post-Secondary Fields of Study

Trades, Industrial and Related Training

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Urban, Regional and Park Planners

Produced JUNE 2003

Urban, regional and park planners study the social, economic, political and physical conditions of urban and rural communities, and develop plans for the overall management and protection of specific land parcels or regions.

NOC Number(s): 2153
Minimum Education: 4 years post-secondary education/training
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: **I S D**

Duties

Urban and regional planners may focus on:

- housing
- subdivision design
- public facilities
- public consultation
- transportation and transit
- parks and recreation
- heritage preservation
- tourism
- downtown revitalization
- health care services and systems
- community and regional economic development
- municipal or regional planning
- current or long range planning.

In general, however, they:

- prepare statutory plans, community plans and land use bylaws
- prepare development guidelines
- facilitate public participation meetings and public forums
- conduct urban design studies
- confer with local authorities, civic leaders, architects, engineers, developers, land surveyors, land owners, social scientists, lawyers and other professionals
- assess social and economic conditions and trends
- control and guide community development and renewal
- set up and maintain database and information systems.

In general, there are three levels of planners:

- junior and entry-level planners are usually recent graduates from recognized schools who work at levels requiring considerable supervision.
- intermediate planners have more experience and responsibilities.
- senior, working-level planners have advanced university education or a number of years of practical experience in planning.

Senior planners may be involved in independent projects and required, from time to time, to supervise technical staff. In some cases, they may act as project managers.

Park planners specialize in the overall planning, design and establishment of parks and natural areas. In general, they:

- co-ordinate plans to preserve the natural features of parks and wilderness areas while allowing visitors to enjoy the outdoor experience
- undertake studies concerning the total recreational use of parks (type of facilities, research management, education and interpretation, and operation)

- prepare reports, plans and recommendations on matters such as priorities in development, zoning, interpretive programs and resource management
- formulate strategies and programs for application throughout the parks system (for more information, see the Landscape Architect occupational profile).

Working Conditions

Most planners work standard office hours in an office environment. However, they may work longer hours to meet project deadlines or attend meetings in the evening.

Personal Characteristics

Urban, regional and park planners need the following characteristics:

- the ability to consider a situation from many competing points of view
- analytical skills and decision-making skills
- the ability to work in a team environment
- good interpersonal and communication skills
- an interest in serving the public.

They should enjoy synthesizing information and developing innovative proposals, presenting plans and proposals to people, and supervising and co-ordinating the work of others.

Educational Requirements

(section revised SEPTEMBER 2004)

Planning requires knowledge in diverse fields, including urban design, economics, architecture, engineering, social sciences, ecology and geography, as well as physical environment design skills. For this reason, planners come from a wide variety of academic backgrounds. Many have a Bachelor of Arts (BA) or Bachelor of Science (B.Sc.) degree in planning or a related discipline such as engineering, architecture, geography, forestry or economics. For information about related bachelor degree programs, see the appropriate occupational profiles (e.g. Architect, Civil Engineer, Economist, Environmental Engineer, Forester, Geographer, Landscape Architect).

Several degree programs directly related to urban, regional and park planning are offered in Alberta:

- The **University of Alberta** in Edmonton offers a four year BA degree program in Recreation and Leisure Studies with a specialization in nature-based leisure and heritage resources. The entrance requirement is an average of at least 70 per cent in English 30 and four other approved Grade 12 subjects (Biology 30 and Social Studies 30 recommended). The Faculty of Extension offers a 13 course part-time Applied Land Use Planning certificate program designed for people who have experience in municipal planning and development.
- The **University of Calgary** offers four year BA degree programs in Urban Studies and Leisure, Tourism and Society. The entrance requirement for the Urban Studies program is an average of 70 per cent in English 30, Pure Math 30 or Math 31, and four other appropriate subjects (French 30, 30S, 30N, Francais 30 or French Language Arts recommended). The entrance requirement for the Leisure, Tourism and Society program is an average of 70 per cent in English 30; Pure or Applied Math 30 or Math 31; and three of the following: Biology 30, Chemistry 30, Physics 30, Social Studies 30, Science 30, a 30-level language other than English, one five-credit grade 12 subject. The University of Calgary also offers a master's degree program in Urban Planning that meets **Canadian Institute of Planners** accreditation requirements as well as a three year MEDes in Urban Design.
- The **University of Lethbridge** offers a four year BA degree program in Urban and Regional Studies, and five year combined degree programs. The entrance requirement is an average of at least 65 per cent in English 30 and three other appropriate 30-level subjects, plus a fifth Grade 12 subject. Biology 30, Chemistry 30, Math 30 or Pure Math 30, and Math 31 may be required for some of the courses in the program.

Post-secondary institutions throughout the province offer university transfer programs that allow students to apply up to two years of study toward university bachelor's degree programs. It is the student's responsibility to ensure that the courses they choose to take will be accepted for credit at the institution to which they wish to transfer.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Other Requirements

(section revised OCTOBER 2004)

Alberta Community Planner is a protected title under Alberta's Professional and Occupational Associations Registration Act. This means that to call yourself an Alberta Community Planner, you must be a registered member of the Alberta Association, Canadian Institute of Planners (AACIP). You do **not** have to be registered if you do not call yourself an Alberta Community Planner.

Employment and Advancement

(section revised JANUARY 2006)

Planners may work for:

- provincial government departments
- federal government departments and agencies
- municipal governments
- intermunicipal service agencies
- development companies and private consulting firms
- large corporations in resource industries
- organizations such as economic development authorities.

Experienced planners may advance to management positions such as planning director. Planning directors supervise other planners, advise and assist in developing policies, and serve on planning boards. They spend most of their time setting policy direction, performing administrative tasks such as writing reports, attending meetings and supervising planners and researchers.

Urban, regional and park planners are part of the larger National Occupational Classification 2153: Urban and Land Use Planners. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Public Administration**
- **Oil and Gas Extraction**
- **Professional and Technical Services**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

About 1,050 Albertans are employed in the Urban and Land Use Planners occupational group which is expected to grow 2.7 to 3.7 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 20 to 40 **new** positions will be created each year **in addition** to job openings created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised SEPTEMBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Urban and Land Use Planners occupational group working part-time or full-time earned from **$28,900 to $89,700 a year.** The average salary was **$68,200 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Association. Canadian Institute of Planners website: www.aacip.com

Canadian Institute of Planners website: www.cip-icu.ca

Related Occupational Profiles

Civil Engineer
Engineering Design and Drafting Technologist
Land Surveyor
Landscape Architect

Related High School Subjects

Information Processing; Language Arts; Languages (other than English); Legal Studies; Mathematics; Science (Biology; and Chemistry); Social Studies; and Tourism Studies

Related Post-Secondary Fields of Study

Engineering, Architecture and Related Studies; Environment, Forestry and Related Studies; and Social Sciences, Law and Religious Studies

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For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Utility Clerk

Produced NOVEMBER 2005

Utility clerks record information, receive payments, process forms, answer enquiries and handle complaints from the public regarding utility company services and policies.

NOC Number(s): 1453.2
Minimum Education: High school diploma
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **M S i**

Duties

In general, utility clerks:

- do the computer and paperwork involved in processing work orders, billing and customer payments
- deal with emergency calls (e.g. no heat in the winter, natural gas leaks)
- answer enquiries about rates, services, bill calculations and adjustments
- resolve customer complaints.

Specific duties depend on company size, location and the type of service provided. In gas, water and electricity companies, utility clerks may:

- take orders for domestic and commercial services in person or by telephone, letter or fax
- provide customer account analysis
- co-ordinate activities with meter readers, crews and sub-contractors
- dispatch orders for repair, installation and discontinuance of service
- implement optional payment plans (e.g. equal payments, pre-authorized electronic withdrawals)
- accept deposits
- review and correct irregular billings and process account adjustments
- explain company policies regarding deposit refunds, rates, payment schedules, credit and collection procedures
- establish customer credit and extend credit (within pre-set limits) and negotiate payment plans
- conduct delinquent bill investigations and disconnect accounts
- promote sales of company products and services.

In large offices, these duties may be separated into several different job descriptions. In some organizations, utility clerks work in call centres (for more information, see the Call Centre Agent occupational profile).

Working Conditions

Utility clerks may work regular office hours, rotating shifts or part-time shifts to cover peak call periods. Dealing with unhappy and difficult customers can be stressful.

Personal Characteristics

Utility clerks need the following characteristics:

- tact and patience for dealing with customers who have complaints
- the ability to remain calm in emergency situations
- good communication skills
- problem-solving and conflict-resolution skills
- an aptitude for working with numbers and detailed paperwork.

They should enjoy having established policies and guidelines for their work, speaking with customers and obtaining the information required to provide services.

Educational Requirements

The minimum education requirement for utility clerks is a high school diploma and good keyboarding skills. However, most employers prefer (and some employers require) job candidates to have at least one year of related post-secondary education (e.g. office procedures training, call centre operations training, accounting courses). Experience in a customer-oriented environment and experience with billing or accounting programs also may be required. The ability to speak a second language is a definite asset.

For information about related post-secondary education programs, see the Accounting Technician, Administrative Assistant and Call Centre Agent occupational profiles.

Employment and Advancement

Utility clerks are employed by utility companies and contractors who operate call centres for utility companies. Most utility company offices and call centres are located in larger centres. Job applicants may be required to successfully complete pre-employment tests and an interview.

Experienced utility clerks may advance to supervisory positions in larger urban offices.

Utility clerks are part of the larger National Occupational Classification 1453: Customer Service, Information and Related Clerks. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Management, Administrative and Other Support Services**
- **Information, Culture and Recreation**
- **Retail Trade**
- **Transportation and Warehousing**
- **Finance, Insurance and Real Estate**
- **Public Administration**
- **Utilities**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 15,600 Albertans are employed in the Customer Service, Information and Related Clerks occupational group which is expected to grow 1.2 to 2.2 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 180 to 350 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since utility clerks form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for utility clerks.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Starting salaries vary according to the size and location of the company, and the responsibilities of the position.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Customer Service, Information and Related Clerks occupational group working part-time or full-time earned from **$11,400 to $93,800 a year.** The average salary was **$32,800 a year.**

Other Sources of Information

EDinfo website: www.alis.gov.ab.ca/edinfo

Related Occupational Profiles

Collection Agent
Dispatcher

Related High School Subjects

Financial Management; Information Processing; Language Arts; Languages (other than English); and Mathematics

Related Post-Secondary Fields of Study

Business, Management and Administrative Studies

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Vending Machine Repairer

Produced JANUARY 2004

Vending machine repairers install, service and repair coin-operated vending machines that dispense food, beverages and other products.

NOC Number(s): 7445
Minimum Education: High school diploma
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: O M I

Duties

Vending machines may dispense a wide variety of goods, ranging from food and tobacco products to coins and cash cards. The duties and responsibilities of vending machine repairers therefore vary depending on the types of machines they service. In general, however, vending machine repairers:

- test new machines prior to installing them
- transport and install machines by connecting them to sources of electricity and, where necessary, water
- make routine service calls to do preventative maintenance work such as cleaning electrical contact points, lubricating parts and making minor adjustments to improve machine operation
- educate route workers who stock machines about about machine operations to reduce the frequency of malfunctions
- respond to calls about machines needing repair from vending machine owners and concessionaires (organizations housing machines on a concession basis)
- use hand tools and electrical testing equipment to adjust machines and pressure gauges and thermometers to test heating and cooling systems
- replace worn parts and defective electronic components
- arrange to return machines requiring major repairs to the shop
- dismantle and repair or rebuild machines in the shop
- fill and clean machines when required
- may collect coins from machines or prepare invoices for concessionaires.

Working Conditions

Vending machine repairers usually work a standard 40 hour week but may be on call evenings and weekends. They work in repair shops and where machines are located (offices, industrial plants, institutions, retail operations such as hotels and restaurants). They often work in busy public places and cramped quarters. Travel from jobsite to jobsite is required.

Lifting items that may weigh up to or over 25 kilograms is required. Safety procedures and equipment are required to avoid injury when moving heavy machines and working with electricity or microwave equipment.

Personal Characteristics

Vending machine repairers need the following characteristics:

- mechanical ability and manual dexterity
- the ability to move large, heavy machines
- good eyesight and colour vision
- the ability to solve problems with little direction or supervision
- good communication and interpersonal skills for dealing with concessionaires and machine owners.

They should enjoy using tools, testing and adjusting equipment and trouble-shooting problems.

Educational Requirements

Vending machine repairers are **trained on the job**. Most begin as route workers who remove cash and keep the vending machines on a regular route stocked and clean. Job applicants must have a valid driver's license and be bondable (acceptable to bonding companies as responsible, law-abiding people).

Most employers prefer to hire applicants who have a **high school diploma**. Basic computer skills are required in companies that generate service orders by computer. Background education or experience in electronics is an asset but not required. Vending machine manufacturers often offer seminars to help repairers keep their knowledge and skills up to date.

Other Requirements

In Alberta, vending machine repairers who work on refrigeration systems must be certified journeymen (for more information, see the Refrigeration and Air Conditioning Mechanic occupational profile).

Employment and Advancement

(section revised JANUARY 2006)

Most vending machine repairers in Alberta are employed by vending machine operators (firms that own or lease vending machines) and soft drink companies. Route workers interested in moving into repair positions may work for the same company for years before an entry-level technical position becomes available.

Advancement opportunities to supervisory positions are limited. With additional training, experienced vending machine repairers may move into related occupations such as meter repairer or scale repairer.

Vending machine repairers are part of the larger National Occupational Classification 7445: Other Repairers and Servicers. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Retail Trade**
- **Repair, Maintenance, Personal and Other Services**
- **Wholesale Trade**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries lsited above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 1,100 Albertans are employed in the Other Repairers and Servicers occupational group which is expected to grow 1.5 to 2.5 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 10 to 30 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since vending machine repairers form only a part of the much larger occupational group on which this forecast is based, only a portion of the new positions created will be for vending machine repairers.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Hourly wages for vending machine repairers range from **$8 to $16 per hour (2004 estimates)** depending on the size of the company and the skills and experience of the vending machine repairer. Most companies pay overtime for emergency repair work on weekends or holidays. Other benefits vary from employer to employer.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Other Repairers and Servicers occupational group working part-time or full-time earned from **$12,200 to $78,600 a year.** The average salary was **$36,100 a year.**

Other Sources of Information

Canadian Automatic Merchandising Association website: www.vending-cama.com

Related Occupational Profiles

Appliance Service Technician
Electronic Technician
Office Equipment Technician
Vending Machine Route Worker

Related High School Subjects

Electro-Technologies; Language Arts; Mathematics; Mechanics; and Physical Education

Related Post-Secondary Fields of Study

Trades, Industrial and Related Training

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Vending Machine Route Worker

Produced MARCH 2005

Vending machine route workers fill, clean and maintain vending machines that dispense change or products in places such as offices, schools and hotels.

NOC Number(s): 7414
Minimum Education: High school diploma
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **M O s**

Duties

Vending machine route workers usually visit machines in 10 to 20 locations per day. They may have a set route or plan their own routes.

Duties and responsibilities may vary from one company to another but, in general, vending machine route workers:

- load supplies in a vehicle such as a van or light truck
- drive to vending machine locations
- open and refill machines
- change product labels if necessary
- collect money and ensure machines are locked
- record the amount of money collected and stock required to refill machines, or download this information into handheld devices
- ensure that machines are clean and in good working order
- establish and maintain good customer relations with business owners and operators
- report damage to machines
- make minor repairs and report broken machines.

They also may deliver and install machines that do not require special electrical or plumbing connections.

Working Conditions

Vending machine route workers drive in all types of weather conditions but spend spend most of their time indoors servicing machines. They usually work shifts from early morning until mid-afternoon. They may work weekends and holidays or be on call. Overtime may be required during busy periods or when driving conditions are poor. In rural areas, long distance travel may be required.

Vending machines are usually exposed to pedestrian traffic and working conditions around them is often cramped. The work is physically demanding. Vending machine route workers routinely lift and carry supplies that may weigh up to 25 kg, and bend and stoop to load machines.

Personal Characteristics

Vending machine route workers need the following characteristics:

- honest and reliable
- physically fit
- able to work with little supervision
- well groomed (to present a positive image of their company)
- able to establish and maintain good customer relations
- aware of security and safety issues.

They should enjoy driving, keeping records and talking to people.

Educational Requirements

There are **no standard education requirements** for vending machine route workers. Employers generally require applicants to:

- have a valid driver's license and a good driving record
- be bondable (acceptable to bonding companies as responsible, law-abiding people)
- have at least Grade 10 education and math skills.

Employers may prefer to hire high school graduates who have computer skills, training in electronics or experience related to inventory management.

Vending machine route workers are trained on the job.

Employment and Advancement

(section revised JANUARY 2006)

Vending machine route workers are employed by vending machine companies and food and beverage manufacturers.

Experienced route workers may move into vending machine repair or supervisory positions. For more information, see the Vending Machine Repairer occupational profile.

Vending machine route workers are part of the larger National Occupational Classification 7414: Delivery and Courier Service Drivers. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Transportation and Warehousing**
- **Retail Trade**
- **Accommodation and Food Services**
- **Wholesale Trade**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 10,500 Albertans are employed in the Delivery and Courier Service Drivers occupational group which is expected to grow 1.0 to 2.0 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 100 to 210 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since vending machine route workers form only a small part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for vending machine route workers.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Delivery and Courier Service Drivers occupational group working part-time or full-time earned from **$12,500 to $188,100 a year.** The average salary was **$33,700 a year.**

Other Sources of Information

Canadian Automatic Merchandising Association website: www.vending-cama.com

Related Occupational Profiles

Messenger/Courier
Truck Driver
Vending Machine Repairer

Related High School Subjects

Electro-Technologies; Language Arts; Logistics; Mathematics; and Physical Education

Related Post-Secondary Fields of Study

Driver Training

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Veterinarian

Produced MARCH 2005

Veterinarians diagnose animal illnesses, treat diseased and injured animals, perform surgery, provide preventive medical services and provide advice regarding the care and breeding of animals.

NOC Number(s): 3114
Minimum Education: 6 years post-secondary education/training
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: I O s

Duties

Veterinarians provide animal health and welfare services, and are involved in food safety, public health and environmental management. In general, they:

- perform routine, emergency and post-mortem examinations
- diagnose diseases
- provide advice regarding preventative health care and herd health
- inoculate animals against infectious diseases
- treat a wide range of injuries and disease conditions
- perform dental procedures on various species
- perform surgery on animals
- provide obstetrical and embryo transfer services
- keep records of sick animals
- provide euthanasia services when necessary.

Diagnosing and treating diseases, injuries and other conditions often involves:

- collecting, examining and analyzing body tissue, feces, blood, urine or other body fluids
- taking and interpreting x-rays
- administering anesthesia and performing exploratory surgery.

Preventive medical services include:

- parasite control programs
- vaccination programs against common viral and bacterial diseases
- routine examinations
- consultations regarding hygiene, nutrition, and general care and breeding of animals
- quality assurance programs for food animal species.

Some veterinarians operate mixed animal practices, providing services for a wide range of animals. Others restrict their practices to particular types of animals such as:

- food-producing animals (beef and dairy cattle, sheep, goats, swine, poultry or fish)
- domestic pets and small animals
- exotic birds and animals
- wildlife and alternative livestock
- horses.

Some veterinarians specialize in a medical discipline such as reproduction, surgery, oncology, dentistry, anesthesiology, dermatology, diagnostic imaging, cardiology or pathology.

In addition to the above duties, veterinarians who own private practices have all the responsibilities of small business owners (e.g. human resources and financial management, inventory management, marketing).

Working Conditions

Veterinarians working with livestock may find the work physically demanding. Depending on the work situation, they may be required to lift up to or over 25 kilograms. Some have mobile clinics for treating animals in barns or open fields.

Occupational hazards include contact with potentially dangerous animals and exposure to diseases which may be transmissible to human beings.

After-hours emergency work is required in many types of veterinary practice.

Personal Characteristics

Veterinarians need the following characteristics:

- confidence in working with animals
- a strong commitment to public health and food safety
- stamina and strength
- good powers of observation and judgment
- good communication and public relations skills
- the ability to work well in a team environment
- a willingness to keep up with current developments in the fields of veterinary medicine and business.

They should enjoy working outdoors, working independently and with the public, helping others and making decisions quickly under pressure.

Educational Requirements

Prospective veterinarians must complete **at least two years of university studies followed by a four year Doctor of Veterinary Medicine (DVM) program.** Most applicants for DVM programs have completed more than two years of university work in a related faculty such as science or agriculture. The entrance requirements for these programs vary from one institution to another. In general, however, they include an minimum average (ranging from 60 to 80 per cent) in English 30, Pure Math 30, Biology 30, Chemistry 30 and Physics 30.

In Canada, four year Doctor of Veterinary Medicine (DVM) degree programs are offered at the:

- **University of Saskatchewan** in Saskatoon
- **University of Guelph**
- **University of Montreal** (instruction in French)
- **Atlantic Veterinary College** in Charlottetown.

Course requirements for admission to these programs vary. Students planning to apply for admission to a DVM program should consult institution websites or calendars for information about course and residency requirements.

Post-secondary institutions throughout Alberta offer university transfer programs that allow students to apply up to two years of study toward university bachelor's degree programs. It is the student's responsibility to ensure that the courses they choose to take will be accepted for credit at the institution to which they wish to transfer.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Other Requirements

Under Alberta's Veterinary Profession Act and General Regulation, only registered members of the Alberta Veterinary Medical Association (AVMA) may call themselves or practice as Veterinarians. However, animal health technologists may provide veterinary services under the supervision of a Registered Veterinarian.

Employment and Advancement

(section revised JANUARY 2006)

Some veterinarians establish their own veterinary practices but most find employment as associates or partners in established veterinary practices.

Veterinarians who do not choose private or clinical practice may be employed as:

- agricultural commodity inspectors
- food hygienists
- researchers in the field of animal disease

- pharmaceutical company representatives
- administrators of veterinary public health programs
- race horse inspectors at racetracks
- teachers at veterinary colleges
- animal health or public health researchers
- clinical veterinarians for laboratory or zoo animals.

Veterinarians employed by government agencies may advance in grade and salary as they accumulate time and experience on the job.

In Alberta, most people employed as veterinarians are work in the **Professional and Technical Services** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Professional and Technical Services industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 900 Albertans are employed in the Veterinarians occupational group which is expected to grow 1.5 to 2.5 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 10 to 30 **new** positions will be created each year **in addition** to job openings created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Veterinarians occupational group working part-time or full-time earned from **$35,600 to $171,500 a year.** The average salary was **$75,800 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Veterinary Medical Association (AVMA) website: www.avma.ab.ca

Canadian Veterinary Medical Association (CVMA) websites: www.canadianveterinarians.net and www.animalhealthcare.ca

Related Occupational Profiles

Animal Health Technologist

Related High School Subjects

Agriculture; Language Arts; Mathematics; Physical Education; and Science (Biology; Chemistry; and Physics)

Related Post-Secondary Fields of Study

Agriculture and Related Technologies

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Visual Merchandiser

Produced MAY 2003

Visual merchandisers capture consumers' attention through the placement of merchandise, signage and interior displays in retail stores and shopping malls.

NOC Number(s): 5243.3
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: I M D

Duties

Most visual merchandisers work for large department stores and retail chains. Their responsibilities and position titles vary from one employer to another but, in general, visual merchandisers:

- arrange showcases, clothes racks, counters and display fixtures
- design lighting and colour range of merchandise
- teach sales staff how to colour co-ordinate clothes racks and counter displays
- work as part of a merchandising team which may include advertising and promotion staff
- attend training sessions and corporate planning meetings to get new ideas for Fall and Spring launches.

They may also:

- co-ordinate construction contractors for major floor changes
- oversee the general cleanliness of the store inside and out
- track rates of sale on the commodities they display.

Visual merchandisers must be aware of the store's layout in intimate detail. Frequent shifts of large quantities of merchandise require merchandisers to be real problem solvers with the ability to anticipate customers' needs.

Some organizations have two levels of visual merchandising positions: one is responsible for the overall look and colour flow of displays, and the other is responsible for maintaining window and other displays on a day-to-day basis.

Displays are usually planned two to four weeks in advance to co-ordinate with special promotions and advertising campaigns. If a visual merchandiser is working exclusively for a chain or a large organization, signage and prop packages are generally provided. Products may be specified for display and guidelines are usually fairly tight to create a uniform store presentation throughout the company.

Freelance merchandisers who work for smaller chains and independent stores may have the opportunity to work under less stringent guidelines. Some do everything from building props to using computers to produce signage.

Working Conditions

Visual merchandisers ensure that stores present a strong corporate image that appeals to the store's target market. Due to constant changes in the retail and fashion market, they must work under tight deadlines. The busiest times of the year are from August to mid-November and March.

Some visual merchandisers travel from store to store, either as an employee of a retail chain or as a freelancer.

Personal Characteristics

Visual merchandisers need the following characteristics:

- artistic ability and imagination
- a keen sense of fashion and trends and willingness to invest the time required to stay current
- the ability to visualize three-dimensional settings
- good problem-solving abilities
- the ability to work independently and in a team environment

- confidence in their ideas combined with the flexibility required to accept other people's suggestions
- good communication skills.

They should enjoy synthesizing information to develop new ideas and find practical solutions to problems, taking a methodical approach to tasks requiring precision and directing the work of others.

Educational Requirements

(section revised DECEMBER 2005)

Visual merchandiser may acquire the necessary knowledge and skills by:

- working with professional visual merchandisers who are willing to spend time sharing their knowledge and experience
- working in related fields such as set design or interior decoration (for more information, see the Set Designer and Interior Decorator occupational profiles)
- taking related post-secondary education.

Most employers prefer to hire applicants who have related post-secondary education.

Art and design programs are offered by post-secondary institutions throughout Alberta. The following institutions offer programs specifically related to visual merchandising:

- **Grant MacEwan College** in Edmonton offers a two year Design Studies diploma program with a specialization in Design and Exhibit Presentation. The admission requirements include a high school diploma with English 30 (or 75 per cent in English 33) and a portfolio of previous work.
- **Olds College** offers one year certificate and two year diploma Fashion programs. The admission requirement is a high school diploma with English Language Arts 30-1 or 30-2 and Applied Math 20 or Pure Math 20.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

(section revised JANUARY 2006)

Visual merchandisers are employed by:

- department stores and retail chains
- media promotion companies
- independent display companies
- co-ordinators of fashion shows
- shopping mall owners.

Experienced visual merchandisers working for large retail stores may advance to senior designer positions. Further advancement opportunities are limited.

Most self-employed display designers have established themselves in the field prior to working on a freelance basis.

Visual merchandisers are part of the larger National Occupational Classification 5243: Theatre, Fashion, Exhibit and Other Creative Designers. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Professional and Technical Services**
- **Information, Culture and Recreation**
- **Retail Trade**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta (employment opportunities are generally best for those who are willing to relocate after their training)
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 600 Albertans are employed in the Theatre, Fashion, Exhibit and Other Creative Designers occupational group which is expected to grow 1.2 to 2.2 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover. (**Note**: Since visual merchandisers form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for visual merchandisers.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Theatre, Fashion, Exhibit and Other Creative Designers occupational group working part-time or full-time earned from **$13,100 to $106,500 a year.** The average salary was **$28,900 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Related Occupational Profiles

Costume Designer
Exhibit Designer
Fashion Designer
Floral Designer
Interior Decorator

Related High School Subjects

Communication Technology; Design Studies; Fashion Studies; Fine Arts (Visual Arts); Language Arts; Management and Marketing; and Mathematics

Related Post-Secondary Fields of Study

Business, Management and Administrative Studies; Communications; and Fine Arts and Performing Arts

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For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Volunteer Manager

Produced FEBRUARY 2005

Volunteer managers plan volunteer involvement in organizations and co-ordinate volunteer programs in a variety of settings.

NOC Number(s): 4212
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: S M I

Duties

Duties and responsibilities vary from one position to another but, in general, volunteer managers:

- plan volunteer programs and identify opportunities for volunteer involvement in not-for-profit and public sector organizations
- recommend policies related to volunteer involvement in an organization
- write role descriptions for volunteers
- design orientation programs for volunteers
- recruit, interview, select and orient volunteers
- implement risk management policies
- develop volunteer recognition programs
- make staff members and the public aware of the volunteer program
- educate staff members about working with volunteers
- provide support for staff who supervise volunteers or, in some cases, supervise volunteers
- evaluate volunteer programs and volunteers
- collect statistics and write reports
- write funding proposals
- administer volunteer program budgets.

Much of the work involves supporting volunteers in their duties and helping staff members and volunteers work together co-operatively. Volunteer managers may also work with a Board of Directors.

Working Conditions

Most volunteer managers work in offices which may be shared with others. Some travel may be required to attend meetings during the day and, sometimes, during evening or weekend hours. Volunteer managers may work part-time, on contract or have additional responsibilities.

Personal Characteristics

Volunteer managers need the following characteristics:

- a demonstrated commitment to volunteerism
- strong interpersonal skills
- organizational and leadership skills
- initiative
- an outgoing, energetic and optimistic manner
- excellent communication skills including writing, negotiation and public speaking skills
- problem-solving and decision-making skills
- patience and tact in dealing with others
- a tolerance for ambiguity
- the ability to multi-task

- the ability to work independently or as part of a team.

They should enjoy helping others, compiling information and maintaining contact with other agencies, and developing innovative approaches to problems.

Educational Requirements

Volunteer managers come from a wide variety of educational backgrounds including volunteer management, adult education, human resource management, public relations, community development, social work, psychology and education. However they acquire them, volunteer managers need computer skills and the following management skills:

- interviewing skills
- training, coaching, team-building and leadership skills
- planning and administrative skills
- marketing skills
- conflict resolution skills.

In Alberta, two post-secondary institutions offer formal training programs in volunteer management:

- **Grant MacEwan College** in Edmonton offers a one year Voluntary Sector Management certificate program with a specialization in volunteer management. The program is delivered in both classroom and distance formats on a part-time or full-time basis. The entrance requirement is a high school diploma with English 30 or equivalent. Grant MacEwan College also offers shorter, non-credit professional development workshops.
- **Mount Royal College** in Calgary offers an eight course Nonprofit Management certificate program with a specialization in volunteer management. Applicants must be at least 18 years of age. The college also offers a four year bachelor's degree program in Nonprofit Studies. The entrance requirement is a high school diploma with English 30 and Social Studies or equivalent.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Volunteer Calgary offers a three day Introduction to Volunteer Management course twice a year that is accepted for credit in the Mount Royal College certificate program.

Employment and Advancement

(section revised JANUARY 2006)

Volunteer managers work in not-for-profit and public sector organizations such as:

- human and social service agencies
- cultural organizations
- leisure and sports organizations
- educational and religious institutions
- health care institutions.

Many volunteer managers work on a part-time or contract basis and must work within small budgets. Advancement opportunities depend on the nature of the organization and the manager's qualifications.

Volunteer managers are part of the National Occupational Classification 4212: Community and Social Service Workers. In Alberta, over 75 per cent of people employed in this classification work in the **Health Care and Social Assistance** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Health Care and Social Assistance industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 9,600 Albertans are employed in the Community and Social Service Workers occupational group which is expected to grow 1.7 to 2.7 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 160 to 260 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since volunteer managers form only a small part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for volunteer managers.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Some volunteer managers are volunteers themselves or work on a contract basis. Salaries for managers who have full-time, paid positions vary considerably. The highest average salaries are in the public sector.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Community and Social Service Workers occupational group working part-time or full-time earned from **$14,100 to $104,900 a year**. The average salary was **$27,800 a year**.

For information about current collective agreements in the public and not-for-profit sectors, see the Health Sciences Association of Alberta (HSAA) website.

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Association for Volunteer Administration (AVA) website: www.avaintl.org

Association of Directors of Volunteer Resources (ADVR) website: www.advr.ab.ca

Health Sciences Association of Alberta (HSAA) website: www.hsaa.ca

Volunteer Alberta website: www.volunteeralberta.ab.ca

Volunteer Calgary website: www.volunteercalgary.ab.ca

Volunteer Management Group Edmonton: www.vmgedmonton.ca

Related Occupational Profiles

Fundraiser
Home Economist
Human Ecologist
Human Resources Professional
Public Relations Representative
Recreation and Sport Administrator
Special Event Co-ordinator

Related High School Subjects

Communication Technology; Enterprise and Innovation; Financial Management; Language Arts; Legal Studies; Management and Marketing; and Social Studies

Related Post-Secondary Fields of Study

Business, Management and Administrative Studies; Communications; Education and Library Studies; Social Sciences, Law and Religious Studies; and Social, Community and Protective Services

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For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Warehousing Professionals

Produced FEBRUARY 2006

Warehousing professionals are responsible for general warehousing activities such as shipping and receiving and planning and managing the flow of goods into, within and from organizations.

NOC Number(s): 7452.2
Minimum Education: Designated Occupation
Employment Outlook: Employment turnover plus average occupational growth in Alberta
Interests: **O M i**

Duties

Warehousing professionals oversee the movement of materials in a wide variety of industries that include agriculture, forestry, health, manufacturing, mining, oil and gas, wholesale and retail, and transportation. Their duties vary from one job to another but, in general, responsibilities can be divided into three levels: basic, intermediate and technician.

Warehousing professionals at the **basic** level:

- generate and pick orders
- pack and ship orders
- receive shipments and ensure that they are complete and in good order
- process product returns
- schedule items for delivery and co-ordinate the delivery of products to end users
- maintain inventories
- operate computer systems
- operate non-powered material handling equipment such as dollies, hand trucks and pallet jacks and powered equipment such as forklifts, cranes and conveyers to move items and place them in appropriate storage areas and bins.
- use storage systems.

Warehousing professionals at the **intermediate** level:

- manage inventory
- manage stocking and storage to prevent loss
- prepare and process orders
- process customer returns
- process the return of products to suppliers
- arrange rail, air and road transportation of materials
- calculate transportation costs and prepare transportation documents
- import and export materials
- operate electronic material identification tools and maintain material identification records
- interact with internal and external customers
- participate in business operations and planning.

Warehousing professionals at the **technician** level:

- supervise warehouse personnel
- purchase materials
- control inventory and forecast inventory needs
- apply established principles of inventory management
- plan and supervise safety programs
- oversee the ISO 9000 certification process
- practice Total Quality Management (TQM)
- design and plan warehouses.

Working Conditions

Warehousing professionals usually work indoors in office and warehouse environments. They may also work outdoors in all weather conditions. Most warehousing professionals work a 40-hour, five-day week. In large warehouses, they may work shifts.

The work is physically demanding. Warehousing professionals are on their feet all day and may be required to lift items weighing up to 25 kilograms.

Personal Characteristics

Warehousing professionals need the following characteristics:

- physical strength and stamina
- manual dexterity
- the ability to work independently
- good math, communication and computer skills
- good customer service skills
- the ability to get along well with fellow workers.

They should enjoy taking a methodical approach to their work, operating handling equipment and keeping detailed records.

Educational Requirements

Warehousing professionals is a **designated occupation** in Alberta. This means that certification is not required but trainees can apply to **Alberta Apprenticeship and Industry Training** for an Alberta Occupational Certificate.

To **enter** the warehousing professional:

- **basic** program, no minimum education level is required. However, a high school diploma with at least Alberta Math 14 (or equivalent) is strongly recommended. Applicants must find a suitable employer who is willing to train a trainee. Most employers prefer to hire high school graduates or people who already have related training or experience.
- **intermediate** program, a Warehousing Professional-Basic certificate is required.
- **technician** program, a Warehousing Professional-Intermediate certificate is required.

The **term of training** is a minimum of 12 months (1,500 hours) of work experience for each level.

Applicants who have related training or work experience may be eligible for credit or certification.

The following post-secondary institutions offer related programs:

- **Calgary Board of Education Chinook Learning Services** in Calgary offers a Warehousing certificate program.
- the **Northern Alberta Institute of Technology** in Fairview offers a Warehousing Training certificate program by non-distance and distance delivery. The entrance requirement is English 10 or 13 and a Grade 10 math.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

Warehousing professionals are employed by organizations that produce, process or use products such as office supplies, tools, food goods, textile products, farm equipment or industrial supplies.

Most warehousing jobs are located in urban centres where manufacturers, wholesalers and large retailers have their warehouses.

With the appropriate training and work experience, individuals can advance through the three branches of this occupation and move into supervisory positions, or move into related fields such as purchasing, inventory control or materials management. Certified Alberta warehousing professionals who have the supervisory or management skills required by industry may apply for an Achievement in Business Competencies Blue Seal by contacting Alberta Apprenticeship and Industry Training.

Warehousing professionals are part of the larger National Occupational Classification 7452: Material Handlers. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Wholesale Trade**
- **Transportation and Warehousing**
- **Retail Trade**
- **Management, Administrative and Other Support Services**
- **Food and Beverage Products Manufacturing**
- **Wood Products Manufacturing**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 20,500 Albertans are employed in the Material Handlers occupational group which is expected to grow 1.3 to 2.3 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 260 to 480 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since warehousing professionals form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for warehousing professionals.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

According to the Alberta Occupational Training Committee for this designated occupation, trainees generally earn an average of:

- **$8 an hour up to $17,000 a year** at the basic level
- **$12 an hour up to $25,000 a year** at the intermediate level
- **$16 an hour up to $33,000 a year** at the technician level **(2005 estimate)**.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Material Handlers (Equipment Operators) occupational group working part-time or full-time earned from **$12,300 to $82,700 a year.** The average salary was **$31,400 a year.**

Other Sources of Information

Alberta Apprenticeship and Industry Training website: www.tradesecrets.org

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Construction Industry "Trade Up!" website: www.careersconstruction.com

Careers in Transportation website: www.transpocity.ca

Related Occupational Profiles

Mail Sorter
Parts Technician
Retail Shelf Stocker
Shipper and Receiver
Station Attendant/Ramp Service Agent

Related High School Subjects

Information Processing; Language Arts; Logistics; Management and Marketing; Mathematics; and Physical Education

Related Post-Secondary Fields of Study

Trades, Industrial and Related Training

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Watch Repairer

Produced APRIL 2003

Watch repairers clean, oil, adjust and repair all types of mechanical and electronic clocks and watches.

NOC Number(s): 7344.2
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus below average occupational growth in Alberta
Interests: O I M

Duties

Watch repairers may specialize in either watch repair or clock repair, or work on all types of timepieces. They may provide retail services in a jewellery store or repair shop, or provide wholesale services (retail companies send time pieces to them for repair at wholesale prices).

In general, to locate and correct defects, watch repairers follow a set routine that involves:

- asking the customer about the timepiece's past performance
- examining the mechanism, sometimes using a magnifying glass or loupe
- taking the timepiece apart, checking for defective parts, rust or misalignment of parts
- replacing or repairing worn or broken parts
- cleaning all parts using special cleaning and rinsing solutions and ultrasonic or mechanical cleaning machines to remove dirt and dried lubricants.

Watch repairers may also:

- test and change watch batteries
- make parts for old or discontinued time pieces
- keep records of serial and model numbers, work performed and charges for repairs.

After re-assembling a timepiece and before returning it to the customer, watch repairers use a timing machine to check timekeeping accuracy.

Working Conditions

Watch repairers sit most of the time, working at well-lighted benches. In retail shops such as jewellery or repair shops, they may work in a room at the back of the store or on an upper floor. They may be required to work some evenings and weekends. In wholesale establishments, hours of work may be shorter but the work may be less varied.

Watch repairers who repair large timepieces may make house calls.

Personal Characteristics

Watch repairers need the following characteristics:

- mechanical aptitude
- good eyesight, with or without glasses
- good form perception
- steady hands and good finger dexterity
- good organizational skills and neat work habits
- patience.

They should enjoy using tools and instruments to perform tasks requiring precision, analyzing information to identify the causes of malfunctions and taking a methodical approach to their work.

Educational Requirements

The recommended way to become a watch repairer is to take **a course in horology**, the science of measuring time by mechanical means. It is possible to train as a watch repairer by working with an experienced watch repairer for at least four years but this practical training should be supplemented by study of the theoretical aspects of watch-making.

Prospective watch repairers should discuss their career plans with experienced watch repairers before enrolling in a training program. Horology courses are offered by the **British Horological Institute** in the United Kingdom and the **National Association of Watch and Clock Collectors** in the United States.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

(section revised JANUARY 2006)

Watch repairers are employed in:

- jewellery stores
- department stores
- repair shops that cater to the public or are associated with a factory
- wholesale repair shops.

Experienced watch repairers may specialize in unusual types of repair or advance to supervisory positions. In small shops, there is limited opportunity for advancement. Some experienced watch repairers set up their own watch repair shops or retail stores.

Watch repairers are part of the larger National Occupational Classification 7344: Jewellers, Watch Repairers and Related Occupations. In Alberta, most people employed in this classification work in the following industries:

- **Repair, Maintenance, Personal and Other Services**
- **Retail Trade**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation**.

About 300 Albertans are employed in the Jewellers, Watch Repairers and Related Occupations group which is expected to expected to grow 0.5 to 1.5 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover. (**Note**: Since watch repairers form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for watch repairers.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised MAY 2004)

Watch repairers' wages **vary tremendously**. Experienced watch repairers may be paid an hourly wage or work on a commission basis, or a combination of both. The profits made by self-employed watch repairers (who may also sell watches and jewellery) depend on market conditions and their business skills.

Other Sources of Information

British Horological Institute website: www.bhi.co.uk

National Association of Watch and Clock Collectors website: www.nawcc.org

Related Occupational Profiles

Jeweller

Related High School Subjects

Language Arts; and Management and Marketing

Related Post-Secondary Fields of Study

Trades, Industrial and Related Training

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Water and Wastewater Treatment Plant Operator

Produced FEBRUARY 2003

Water and wastewater treatment plant operators monitor and operate control systems and equipment in water purification and treatment plants, and wastewater, sewage treatment and liquid waste plants.

NOC Number(s): 9424.1, 9424.2
Minimum Education: High school diploma
Employment Outlook: Employment turnover plus below average occupational growth in Alberta
Interests: O I M; O I M

Duties

Water treatment plant operators control the processes and equipment used to clarify, purify and disinfect surface or well water for human consumption.

Wastewater treatment plant operators control the processes and equipment used to treat and dispose of sewage and industrial wastes.

Duties and responsibilities vary depending on the size and complexity of the plant but, in general, water and wastewater treatment plant operators:

- read and interpret meters, gauges and other sensing devices to monitor plant operation
- adjust controls to regulate flow coming into the plant and monitor its progress through various processes in the plant
- operate pumps, valves, equipment and chemical-feeding systems
- test and adjust chemical feed rates to ensure quality for disinfection, taste, odour and suppressants
- take samples of the water or wastewater
- perform routine laboratory tests and interpret results
- keep detailed daily records of chemical test results, readings and changes in plant operation
- prepare monthly and annual reports
- operate computer data acquisition and data control and alarm systems
- ensure that water or wastewater meets Alberta Environment standards at all times.

They may also:

- maintain equipment and make minor repairs to valves, pumps or other equipment
- deal directly with the public regarding water quality complaints and emergencies
- investigate taste and odour complaints
- monitor truck dump sites, which may involve sampling and interpreting lab analyses for approval to discharge
- operate sludge handling systems
- monitor and make adjustments to biological processes.

In larger plants, water and wastewater treatment plant operators are usually assigned to a particular treatment area or station. In small plants, they may operate water distribution and wastewater collection systems as well as treatment systems. In small towns or villages, they may also be responsible for water and sewer line repair and street maintenance, which may involve pick and shovel work and/or operating machines such as pneumatic jack hammers, graders and backhoes.

Working Conditions

Water and wastewater treatment plant operators work indoors and outdoors. The working environment can be dirty, cold, hot or noisy. At times, chemicals and wastewater plants may emit unpleasant odours. Safety precautions are required to reduce the risk of injury from working with dangerous gases, open tanks, electrical equipment, chemicals, confined spaces and slippery walkways. Operators may be required to lift bags of chemicals weighing up to 25 kilograms.

Since treatment plants generally operate 24 hours a day, seven days a week, operators may work shifts that include weekends and holidays. Overtime may be required during spring run off or for emergencies such as flooding or equipment failure.

Personal Characteristics

Water and wastewater treatment plant operators need the following characteristics:

- good hearing, eyesight and colour vision
- good health and stamina
- the ability to climb ladders, lift, bend and work in awkward positions
- manual dexterity
- mechanical aptitude
- good arithmetic skills for calculations using formulas, percentages and ratios
- good oral and written communication skills
- a responsible, conscientious attitude.

They should enjoy using tools and instruments to control systems and equipment, analyzing test results and instrument readings, and taking a methodical approach to collecting and analyzing samples.

Educational Requirements

The minimum education requirement for water and wastewater treatment plant operators is a **high school diploma** or equivalent, preferably with courses in mathematics, biology, chemistry and physics. Most employers prefer to hire applicants who have been certified by Alberta Environment (see Other Requirements below), are graduates of a post-secondary program in water and wastewater treatment, or have a background in chemistry, hydraulics, instrumentation and computers.

Employers may require job applicants to have a valid Alberta driver's license.

In Alberta, the **Northern Alberta Institute of Technology** in Edmonton offers a one year co-op Water and Wastewater Technician certificate program. This program is also offered on a part-time distance delivery basis. The entrance requirement is a high school diploma or equivalent.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Other Requirements

All water and wastewater treatment plants in Alberta must have at least one certified operator on site. There are four levels of certification, each of which has progressive education, work experience and examination requirements. For more detailed information, contact Alberta Environment.

Employment and Advancement

(section revised JANUARY 2006)

Most water and wastewater treatment plant operators are employed by municipal governments. Others are employed by:

- regional water/wastewater boards
- the federal government (for example, in the Canadian Forces)
- private utility companies
- large industrial plants
- provincial parks
- engineering consulting firms
- operator training services.

Some operators contract their services to several small communities.

Operators in small towns may be employed part-time or have additional responsibilities. They may be required to be certified by Alberta Environment for water distribution and collection **and** water treatment and wastewater treatment.

Advancement to supervisory positions generally requires certification. The level of certification required depends on the

size and complexity of the treatment plant. For example, supervisors at village treatment plants may need a level one certificate; senior supervisors at large city facilities may need a level four certificate. Advancement to management positions in large facilities may require additional post-secondary education.

Water and wastewater treatment plant operators are part of the larger National Occupational Classification 9424: Water and Waste Plant Operators. In Alberta, over 75 per cent of people employed in this classification work in the **Utilities** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Utilities industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation**.

Over 550 Albertans are employed in the Water and Waste Plant Operators occupational group which is expected to grow 0.3 to 1.3 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Hourly wages for treatment plant operators vary depending on the size of the plant and the certification levels required, but generally range from **$12 to $28 per hour**.

According to the **2005 Alberta Wage and Salary Survey**, part-time or full-time starting salaries for Albertans working in the Water and Waste Plant Operators occupational group ranged from **$19,900 to $44,500 a year.** After three years, salaries ranged from **$25,000 to $49,400 a year.** The average salary was **$44,900 a year**.

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Environment website: www.gov.ab.ca/env

Canadian Council for Human Resources in the Environment Industry (CCHREI) website: www.cchrei.ca

Related Occupational Profiles

Chemical Engineering Technologist
Chemical Technologist
Hazardous Waste Management Technologist
Hydrometric Technician/Technologist

Related High School Subjects

Information Processing; Language Arts; Mathematics; Mechanics; Physical Education; and Science (Biology; Chemistry; and Physics)

Related Post-Secondary Fields of Study

Engineering and Science Technologies; and Trades, Industrial and Related Training

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Water Well Driller

Apprenticeship and Industry Training

Produced FEBRUARY 2006

Water well drillers set up and operate mobile rotary, boring or cable tool drilling rigs used to drill residential, commercial and industrial water wells. They also conduct environmental assessment drilling.

NOC Number(s): 7373
Minimum Education: Apprenticeship Trade - Grade 9
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: O M i

Duties

To find potable water that is clean and safe for drinking, water well drillers must know the geological formations of the area in which they are working. They may assist customers in locating a well and estimating the cost.

After setting up the drilling rig, water well drillers:

- operate the rig to bore a hole for the well and line the hole with well casings (steel or plastic pipes)
- record information about the geological formations encountered
- put screens and pumps in place to develop the well
- design and install a pumping system
- clean and disinfect the well in preparation for use.

Water well drillers also disinfect, re-construct and re-develop older contaminated wells and water pumping systems.

Working Conditions

Water well drillers work outdoors and usually travel to work sites. The work is strenuous, noisy and dirty. Hours of work vary because some jobs must continue non-stop until completion. There is some risk of injury when working with power equipment.

Water well drillers may be required to lift equipment weighing over 25 kilograms.

Personal Characteristics

Water well drillers need the following characteristics:

- physical strength and stamina
- mechanical aptitude
- manual dexterity
- the ability to judge distances and spatial relationships
- the ability to work independently or with others.

They should enjoy scheduling their own hours and working independently.

Educational Requirements

To work in Alberta, water well drillers must be ONE of the following:

- registered apprentices
- certified journeymen
- working for an employer who is satisfied that they have the skills and knowledge expected of certified journeymen
- self-employed.

To **register** with **Alberta Apprenticeship and Industry Training**, apprentices must:

- have at least an Alberta Grade 9 education (or equivalent) or pass an entrance exam
- find a suitable employer who is willing to hire and train an apprentice. Most employers prefer to hire high school graduates and may select apprentices from among their current employees.

The **term of apprenticeship** is two years (two 12-month periods) that include a minimum of 1,800 hours of on-the-job training and six weeks of technical training each year. High school students can become apprentices and gain credits toward apprenticeship training and a high school diploma at the same time through the Registered Apprenticeship Program (RAP).

Applicants who have related training or work experience may be eligible for credit or certification.

Technical training is arranged by Alberta Apprenticeship and Industry Training and is currently offered at Red Deer College.

Outside the apprenticeship program, **Red Deer College** offers a one year Water Management and Drilling certificate of completion program through Continuing Education by distance. There are no formal admission requirements. Red Deer College also offers Water Well drilling programs and Pump Installer distance delivery courses.

Pre-employment programs for prospective apprentices and continuing education programs for journeymen may be offered on an as needed basis by the institution(s) listed above or other schools.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

Most water well drillers are self-employed. Some are employed by water well drilling companies. Many water well drilling operations are family-run businesses.

The demand for water well drilling services slows down somewhat in the winter. In the off-season, water well drillers may:

- work for construction companies drilling holes for pilings or drilling test holes
- maintain and upgrade their equipment
- work with water purification and water pumping systems.

Experienced water well drillers may advance to supervisory positions. Alberta certified journeyman water well drillers who have the supervisory or management skills required by industry may apply for an Achievement in Business Competencies Blue Seal by contacting Alberta Apprenticeship and Industry Training.

In Alberta, most people employed as water well drillers work in the **Construction** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Construction industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

About 350 Albertans are employed in the Water Well Drillers occupational group, which is expected to grow up 2.5 to 3.5 per cent each year from 2005 to 2010 in Alberta. Additional job openings will be created by employment turnover.

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Apprentice water well drillers earn at least 60 per cent of the journeyman wage rate in their place of employment in the first year and 85 per cent in the second. According to the Alberta Provincial Apprenticeship Committee for this trade, journeyman wage rates vary, but generally range from **$14 to $24 an hour plus benefits** (2004 estimate).

In 2003, Albertans working in the Water Well Drillers occupational group earned **up to $66,800 a year as a starting wage.** The average salary was **$63,400 a year** (2003 Alberta Wage and Salary Survey).

Other Sources of Information

Alberta Apprenticeship and Industry Training website: www.tradesecrets.org

Post-secondary institution calendars or websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Water Well Drilling Association website: www.awwda.com

Canadian Ground Water Association website: www.cgwa.org

Construction Sector Council website: www.csc-ca.org

Related Occupational Profiles

Blaster
Crane and Hoisting Equipment Operator
Rig Technician

Related High School Subjects

Mechanics; and Physical Education

Related Post-Secondary Fields of Study

Trades, Industrial and Related Training

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Web Designer

Produced JULY 2004

Web designers create websites for the Internet and sites internal to their organizations.

NOC Number(s): 2175
Minimum Education: 2 years post-secondary education/training
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: **I M D**

Duties

This is a new and evolving occupation. Duties and responsibilities vary considerably from one position/project to another depending on the organization's needs. In general, however, web designers work with a wide variety of people in an organization to:

- determine website goals and objectives
- design website content that satisfies the webmaster, website content writers in the organizations and website users external to the organization
- use graphics programs or work with graphic artists to create unique graphics for the site that do not make site access speeds unacceptably slow
- work with marketing experts to ensure that advertisements get maximum exposure
- convert written, graphic, audio and video components to Internet-compatible formats by using software designed to facilitate the conversion process or by doing the required programming themselves
- ensure that the site operates as planned by performing site and usage analyses and modifying the site as needed
- upgrade site content on an ongoing basis to improve and keep the site visually interesting.

In large organizations, design and technical responsibilities may be divided among two or more employees.

Web designers may work with computer programmers to design and develop business applications and software tools for electronic publishing and database access.

Working Conditions

Web designers may work standard weekday hours in an office environment or work primarily evening and weekend hours (when they have access to servers and systems while fewer users are online). Overtime is often required to meet project deadlines. Occupational hazards include eyestrain and injuries related to repetitive movement.

The work can be stressful when there are technical problems and when interested parties have conflicting ideas about the design or content of a website.

Personal Characteristics

Web designers need the ability to:

- think logically and concentrate for long periods of time
- organize information effectively
- pay attention to details to avoid time-consuming and therefore costly errors
- remain patient and persistent when debugging programs
- communicate ideas clearly in person and on paper
- get along well with other team members.

They should enjoy analyzing and developing information, performing tasks requiring precision and consulting with others.

Educational Requirements

(section revised FEBRUARY 2006)

Web designers come from a wide variety of backgrounds. Some employers require applicants to have at least **two years of related post-secondary education**.

Many web designers have moved into this rapidly evolving occupation from other occupations. For example, some web designers are graduates of post-secondary education programs in computer science who have acquired the necessary writing, graphic design and management knowledge and skills through working closely with other professionals such as graphic artists and marketing managers, and through professional development activities (e.g. reading, personal experimentation, attending seminars). For information about post-secondary education programs in computer science, see the Computer Programmer occupational profile.

Some web designers have worked in fields other than computer science and acquired the necessary computer skills through work experience and professional development activities. For more information about related occupations, see the Interactive Media Developer, Graphic Designer, Librarian, Marketing Manager and Technical Writer occupational profiles.

Whatever their background, web designers must continuously upgrade their knowledge in this rapidly changing field.

The following post-secondary institutions offer programs specifically related to website design and development:

- **Academy of Learning**, a private vocational school in Edmonton South, offers a 52 week Multimedia Developer for the Internet program.
- **Alberta Career Computer Center Inc.**, a private vocational school in Edmonton, offers a 23 week Microcomputer Office and Web Design program.
- **Bow Valley College** in Calgary offers a part-time Web Site Development certificate program.
- **CDI College of Business, Technology and Health Care**, a private vocational school in Calgary and Edmonton, offers a 50 week Programmer Analyst/Internet Solution Developer program.
- **DevStudios**, a private vocational school in Edmonton, offers 30 week programs in E-Commerce MCSD.NET and e-Media and Design.
- **Grant MacEwan College** in Edmonton offers a two year Digital Arts and Media diploma program.
- **GURU Digital Arts College** in Edmonton offers a 24 week Digital Media Producer program.
- **Infogem Institute of Technology**, a private vocational school in Calgary, offers a 26 week CIW Master Designer Plus program.
- **Lethbridge Community College** offers a two year Multimedia Production diploma program.
- **Mount Royal College** in Calgary offers a Web Design certificate program through Continuing Education.
- **Red Deer College** offers a 21 week Multimedia Web Developer certificate program through Extension Services.
- **Southern Alberta Institute of Technology** in Calgary offers a two year New Media Production and Design diploma program.
- **Sprott-Shaw Community College** in Calgary offers a 35 week part-time programs: Web Developer, and Computer Graphics and Web Media.
- The **University of Calgary** offers a Web Designer and Web Developer certificate programs through the Faculty of Continuing Education.
- The **University of Lethbridge** offers a four year Bachelor of Fine Arts (BFA) degree program specializing in New Media.

Admission requirements vary but generally include a high school diploma with Grade 12 English and at least Grade 11 math, or equivalent. Some programs require a minimum average (ranging from 60 to 70 per cent) and specific courses (e.g. English 30, Pure Math 30). For current information on specific programs and mature student admission policies, check post-secondary calendars or websites.

Continuing education programs are often offered on an as needed basis.

Other Requirements

(section revised OCTOBER 2004)

Information Systems Professional is a protected title under Alberta's Professional and Occupational Associations Registration Act. This means that to call yourself an Information Systems Professional, you must be a registered member of the Canadian Information Processing Society of Alberta (CIPS Alberta). You do **not** have to be registered if you do not call yourself an Information Systems Professional.

Employment and Advancement

(section revised JANUARY 2006)

Web designers may be employed by or work on a contract basis for a wide variety of organizations in the private, public and non-profit sectors. Employers may ask job candidates to submit a Web portfolio of current, active websites they have created plus descriptions of site goals, target audiences and results.

Experienced web designers may move into related occupations such as systems security analyst, information systems quality assurance analyst, computer programmer or interactive media developer. Those who have management skills may become webmasters.

Web designers are part of a larger computer systems analysts occupational group. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Professional and Technical Services**
- **Public Administration**
- **Finance, Insurance and Real Estate**
- **Oil and Gas Extraction**
- **Information, Culture and Recreation**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 2,800 Albertans are employed in the Web Designers and Developers occupational group which is expected to grow 3.0 to 4.0 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 80 to 120 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since web designers form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for web designers.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised SEPTEMBER 2005)

Income figures for web designers **vary considerably** depending on their qualifications and the scope of the position. Inexperienced web designers may work on volunteer projects or for relatively little compensation to gain experience and build a portfolio.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Web Designers and Developers occupational group working part-time or full-time earned from **$15,900 to $143,200 a year.** The average salary was **$60,600 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Canadian Information Processing Society (CIPS) website: www.cips.ca

Software Human Resource Council (SHRC) website: www.shrc.ca

Related Occupational Profiles

Computer and Network Operator
Computer Programmer
Customer Support Analyst
Data Administrator
Database Analyst
Graphic Designer
Information Systems Quality Assurance Analyst
Interactive Media Developer
Software Engineer
Systems Auditor
Systems Tester
Web Technician
Webmaster

Related High School Subjects

Communication Technology; Design Studies; Fine Arts (Visual Arts); Information Processing; Language Arts; and Mathematics

Related Post-Secondary Fields of Study

Business, Management and Administrative Studies; Communications; Computer and Information Technology; and Humanities and Languages

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For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Web Technician

Produced JULY 2004

Web technicians set up and maintain Internet and intranet websites and web server hardware and software, and monitor and optimize network connectivity and performance.

NOC Number(s): 2281.2
Minimum Education: 2 years post-secondary education/training
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: **O m i**

Duties

The Internet is a huge network made up of millions of links between web servers (website computers). On each server, there may be one or more:

- Internet websites designed to facilitate communication between an organization and the general public
- intranet websites designed to facilitate communication among an organization's employees (intranet sites are not available to the public).

Web technicians help webmasters, web designers and computer programmers set up and maintain websites and web servers. Their duties and responsibilities vary from one job to another but, in general, web technicians:

- implement network traffic and security monitoring software, and optimize server performance
- modify web pages, applets and scripts
- research and apply meta-data to websites, and register websites with search engines
- respond to requests for help and information from website visitors and website designers
- ensure websites operate correctly by monitoring and testing website performance on an ongoing basis
- perform web server backup and recovery operations.

For information about computer specialists who operate and support the use of other types of networks, see the Computer and Network Operator occupational profile.

Working Conditions

Web technicians work in environmentally controlled computer rooms and offices. To avoid disrupting normal use of websites during peak use periods, technicians often work evenings and weekends. They may work 8 or 12 hour shifts (days, nights or weekends).

Some lifting (up to 10 kilograms) is required.

Personal Characteristics

Web technicians need the following characteristics:

- the ability to learn quickly, think logically and analyze complex problems
- the ability to express ideas in clear, understandable terms and communicate effectively in writing
- the ability to think creatively and visualize ideas
- good interpersonal skills for dealing with website users
- a keen interest in keeping up to date with technological developments.

They should enjoy analyzing information and solving problems, taking a methodical approach to tasks requiring precision and working with others.

Educational Requirements

Web technicians need expert-level HTML skills (HTML is the document description language used for most websites). They may be:

- graduates of post-secondary programs related to computer science
- liberal arts graduates who have acquired the necessary technical skills by taking related training programs.

In Alberta, many universities, colleges, technical institutes and private vocational schools offer post-secondary programs related to computer science. For lists of relevant programs, see the Computer and Network Operator, Computer Programmer and Web Designer occupational profiles.

Prospective web technicians are strongly advised to discuss their training options with potential employers before enrolling in a training program. Some employers require job applicants to have certification or training from specific software vendors.

Other Requirements

(section revised OCTOBER 2004)

Information Systems Professional is a protected title under Alberta's Professional and Occupational Associations Registration Act. This means that to call yourself an Information Systems Professional, you must be a registered member of the Canadian Information Processing Society of Alberta (CIPS Alberta). You do **not** have to be registered if you do not call yourself an Information Systems Professional.

Employment and Advancement

Web technicians are employed by Internet service providers (ISPs), and organizations throughout the public and private sectors that maintain large websites.

Web technician is an entry level position in which new post-secondary graduates can learn more about server administration, CGI scripting and the maintenance of large websites. Experienced web technicians may move into other computer-related occupations such as computer and network operator, computer programmer, interactive media developer or web designer. Web technicians who have management-related education or experience may become webmasters.

Web technician is a new and rapidly growing occupation.

Salary

(section revised OCTOBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Web Technicians occupational group working part-time or full-time earned from **$19,700 to $96,200 a year.** The average salary was **$65,400 a year.**

Other Sources of Information

Post-secondary institution calendars and websites (see Educational Requirements above)

EDinfo website: www.alis.gov.ab.ca/edinfo

Canadian Information Processing Society (CIPS) website: www.cips.ca

Software Human Resource Council (SHRC) website: www.shrc.ca

Related Occupational Profiles

Computer and Network Operator
Computer Programmer
Customer Support Analyst
Interactive Media Developer
Systems Tester
Web Designer
Webmaster

Related High School Subjects

Communication Technology; Electro-Technologies; Information Processing; Language Arts; Mathematics; and Physical Education

Related Post-Secondary Fields of Study

Computer and Information Technology

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Webmaster

Produced JULY 2004

Webmasters are responsible for the design, development, maintenance and success of World Wide Web sites on the Internet and sites internal to their organizations.

NOC Number(s): 2175
Minimum Education: 2 years post-secondary education/training
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: I M D

Duties

This is a rapidly evolving occupation in which duties and responsibilities vary considerably from one job to another. For the purposes of this profile, webmasters are defined as managers who are responsible for their organizations' websites. For a description of the activities involved in designing websites, see the Web Designer occupational profile. For information about activities involved in website development, see the Computer Programmer profile.

In general, webmasters:

- ensure that websites advance their organizations' goals
- ensure optimum site performance on an ongoing basis (this often requires balancing graphic appeal against access speed requirements as well as overseeing technical activities)
- promote the website within the organization and educate people about related issues and technology
- develop and implement budgets for website development and maintenance
- co-ordinate the work of people who do website-related work (e.g. web designers, web technicians)
- select server or desktop environments and web development tools
- set standards and procedures regarding the design and production of additions to the site
- use software to generate and track site access statistics.

In large organizations, webmasters may work with a team of information specialists or a committee of representatives from various parts of the organization. In a growing number of organizations, webmasters are also responsible for developing and maintaining an intranet (an internal network similar to the Internet but accessible only to personnel within the organization).

In small organizations, webmasters may be personally responsible for everything from the initial design of the website to coding documents and monitoring site traffic and performance.

Working Conditions

Webmasters generally work standard weekday hours in an office environment. Evening and weekend work may be required for website installation and maintenance activities.

The work can be stressful when:

- there are technical problems with websites or intranets
- personnel from different parts of the organization have conflicting ideas about the purpose, design and content of the site or intranet
- people have unrealistic expectations regarding system reliability or the frequency or speed of information updating.

Occupational hazards include eyestrain from spending long hours in front of a computer screen and repetitive movement injuries.

Personal Characteristics

Webmasters need the following characteristics:

- the ability to communicate effectively with all kinds of people, in person and in writing
- the ability to lead and work effectively as part of a team
- the ability to pay careful attention to details
- excellent organizational skills
- an interest in keeping up to date with rapidly changing technology
- the ability to anticipate change and make decisions in an uncertain environment.

They should enjoy co-ordinating information, negotiating with people and developing innovative solutions to problems.

Educational Requirements

In the past, the person who first advocated the development of an organizational website was often the person who eventually became the organization's webmaster. This person may have come from a wide variety of backgrounds (e.g. marketing and business management, public relations, computer science, library science or graphic design).

Webmasters need a combination of management and technical expertise. The specific qualifications required vary depending on the nature of the position and the employing organization but generally include an understanding of principles and current practices in:

- management and administration
- technical writing and graphic design
- computer hardware and software systems.

Webmasters generally acquire the knowledge and skills they need through a combination of work experience and formal education. For example, an experienced marketing manager can acquire the required technical expertise through professional development activities such as attending seminars, reading extensively and working closely with other professionals (e.g. graphic artists, writers, computer engineers, computer programmers, database analysts, librarians). Likewise, people educated and experienced in other occupations can acquire management-related knowledge and skills through professional development acitivities.

Some employers require webmasters to have considerable computer expertise including a working knowledge of specific computer languages such as HTML (hypertext markup language), Java, PERL, ActiveX, CGI scripting or database expertise. For other positions, an overall knowledge of what is technologically possible is more important than programming skills in specific languages.

Those interested in becoming webmasters should begin by taking a post-secondary program related to management and administration, computer science or web design. (For more information, see the Web Designer, Marketing Manager, Software Engineer, Computer Programmer, Graphic Designer, Librarian and related occupational profiles.)

Continuing education programs are often offered on an as needed basis.

Other Requirements

(section revised OCTOBER 2004)

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Employment and Advancement

Webmasters may be employed by or work on a contract basis for organizations of all types including:

- wholesale or retail businesses
- large corporations
- government departments
- industrial establishments
- consulting firms
- post-secondary institutions
- non-profit organizations.

Webmaster is a management level position requiring previous related experience. Opportunities for further advancement depend on the nature of the organization and the webmaster's qualifications.

Salary

Income figures for webmasters **vary greatly** depending on the scope of the position and the webmaster's training and experience. Webmasters in small, non-profit organizations may be volunteers.

Salaries for webmasters who have management responsibilities are generally higher than for those who do not.

Other Sources of Information

Canadian Information Processing Society (CIPS) website: www.cips.ca

Software Human Resource Council (SHRC) website: www.shrc.ca

Related Occupational Profiles

Customer Support Analyst
Data Administrator
Information Systems Quality Assurance Analyst
Librarian
Library Technician
Marketing Manager
Public Relations Representative
Systems Auditor
Web Designer
Web Technician

Related High School Subjects

Communication Technology; Enterprise and Innovation; Information Processing; Language Arts; Management and Marketing; and Mathematics

Related Post-Secondary Fields of Study

Business, Management and Administrative Studies; Communications; Computer and Information Technology; Education and Library Studies; Engineering, Architecture and Related Studies; Sciences; and Social Sciences, Law and Religious Studies

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Welder

Produced FEBRUARY 2006

Welders join and sever metal components and make metal parts, tools, machines and equipment.

NOC Number(s): 7265.1
Minimum Education: Apprenticeship Trade - Grade 9
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: **O M I**

Duties

Welders use the following welding processes and fillers depending on the type of metal, its size and shape and requirements for finished product strength.

- **Electric arc welding** - heat is created as an electric current flows through an arc between the tip of the welding electrode and the metal
- **Gas welding (oxy-acetylene welding)** - the flame from the combustion of burning gases melts the metal
- **Arc and gas welding** - filler materials are melted and added to fill the joint and make it stronger
- **Resistance welding** - the metal piece itself is melted as current flows through it and no filler is added.

Duties vary from one position to another but, in general, welders:

- develop patterns for projects or follow directions given in layouts, drawings and work orders
- clean, check for defects and shape component parts, sometimes using a cutting torch
- weld parts together.

Welders may also build up worn parts by welding on layers of high-strength hard-metal alloys.

Working Conditions

Welders may work outdoors on construction sites or indoors in production and repair shops. In some cases, they have to travel to job sites (e.g. oilfields). A 40-hour work week is normal, although overtime is sometimes required to meet project deadlines. There is some risk of injury when working with torches and hot metals that produce sparks and toxic gases.

Welders may be routinely required to lift heavy items.

Personal Characteristics

Welders need the following characteristics:

- manual dexterity
- good vision (glasses are acceptable)
- good hand-eye coordination
- the ability to concentrate on detailed work
- the ability to work with little direction or supervision
- patience
- the ability to keep up to date with changing technology.

They should enjoy building and working with little direction or supervision.

Educational Requirements

To work in Alberta, welders must be registered apprentices or certified journeymen.

To **register** with **Alberta Apprenticeship and Industry Training**, apprentices must:

- have at least an Alberta Grade 9 education (or equivalent) or pass an entrance exam
- find a suitable employer who is willing to hire and train an apprentice. Most employers prefer to hire high school graduates and may select apprentices from among their current employees.

The **term of apprenticeship** is three years (three 12-month periods) that include a minimum of 1,560 hours of on-the-job training and eight weeks of technical training each year. High school students can become apprentices and gain credits toward apprenticeship training and a high school diploma at the same time through the Registered Apprenticeship Program (RAP).

Applicants who have related training or work experience may be eligible for credit or certification.

Welder apprentices may attempt the Interprovincial Exam in the final period of their apprenticeship training and, if successful, are granted a Red Seal (which is recognized in most parts of Canada).

Technical training is arranged by Alberta Apprenticeship and Industry Training and is currently offered at:

- Keyano College in Fort McMurray
- Lakeland College in Vermilion
- Lethbridge Community College
- Medicine Hat College
- the Northern Alberta Institute of Technology (NAIT) in Edmonton and Fairview
- Northern Lakes College in Grouard
- Portage College in Lac La Biche
- Red Deer College
- the Southern Alberta Institute of Technology (SAIT) in Calgary.

NAIT also offers technical training by distance delivery.

Competency-Based Apprenticeship Training (CBAT) is also offered by NAIT and Red Deer College.

Outside the apprenticeship program, the **Southern Alberta Institute of Technology (SAIT)** in Calgary offers a two year Welding Engineering Technology diploma by distance and non-distance. The entrance requirement is a high school diploma with Pure Math 30 or Math 30 and English 30 or 33 or English Language Arts 30-1 or 30-2. This course is accredited by the Canadian Council of Technicians and Technologists.

Pre-employment programs for prospective apprentices and continuing education programs for journeymen may be offered on an as needed basis by the institution(s) listed above or other schools.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

Welders are employed in a variety of industries, including vessel or structural steel assembly, pipeline construction, commercial construction, industrial construction, steel fabrication and heavy equipment repair. Some open their own repair shops or work as portable rig welders who contract out their services.

Experienced welders may advance to positions such as welding inspector, welding foreman or supervisor, or plant supervisor. Alberta certified journeyman welders who have the supervisory or management skills required by industry may apply for an Achievement in Business Competencies Blue Seal by contacting Alberta Apprenticeship and Industry Training.

Welders are part of a larger welders and soldering machine operators occupational group. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Metals, Metal Fabrication and Machinery Manufacturing**
- **Repair, Maintenance, Personal and Other Services**
- **Other Manufacturing**
- **Oil and Gas Extraction**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- time of year (for seasonal jobs)
- trends and **events** affecting overall employment (especially in the industries listed above)

- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

About 11,150 Albertans are employed in the Welders and Related Machine Operators occupational group which is expected to grow 2.5 to 3.5 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 270 to 390 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since welders form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for welders.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Apprentice welders earn at least 60 per cent of the journeyman wage rate in their place of employment in the first year, 75 per cent in the second and 90 per cent in the third. According to the Alberta Provincial Apprenticeship Committee for this trade, journeyman wage rates vary considerably, but generally range from **$20 to $30 an hour plus benefits** (2004 estimate).

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Welders and Related Machine Operators occupational group working part-time or full-time earned from **$20,400 to $170,300 a year.** The average salary was **$58,200 a year.**

Other Sources of Information

Alberta Apprenticeship and Industry Training website: www.tradesecrets.org

EDinfo website: www.alis.gov.ab.ca/edinfo

Alberta Construction Industry "Trade Up!" website: www.careersconstruction.com

Calgary Construction Association website: www.cca.cc

Construction Sector Council website: www.csc-ca.org

Related Occupational Profiles

Boilermaker
Career and Technology Studies Teacher
Commercial Diver
Heavy Equipment Technician
Ironworker
Machinist
Millwright
Structural Steel and Plate Fitter

Related High School Subjects

Fabrication Studies; and Physical Education

Related Post-Secondary Fields of Study

Trades, Industrial and Related Training

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OCCinfo Alberta Occupational Profiles

Alberta Human Resources and Employment

Well Service Equipment Operator

Produced JULY 2005

Well service equipment crews are called in at different times during the development of oil and gas wells for specialized oil field service operations such as cementing, acidizing, fracturing or nitrogen injection.

NOC Number(s): 8412.2
Minimum Education: High school diploma
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: **O M i**

Duties

Well service equipment operators provide a variety of specialized services. Their responsibilities and job titles vary from one employer to another and from one type of service to another but, in general, they:

- prepare trucks, equipment, materials and supplies
- deliver equipment and materials to well sites
- meet with rig personnel to discuss and plan specialized operations
- use hand tools to assemble and connect equipment
- direct and assist helpers, floorhands and derrickhands in the use of hoisting equipment where necessary
- monitor control panels and operate equipment controls
- keep records and prepare reports about service operations
- train and supervise helpers
- service and maintain equipment.

Power tong operators operate hydraulic power tongs that are used to connect casing as it is lowered into a well. They manage hydraulic controls that provide power and operate the power tongs, and monitor pressure gauges to make sure the correct amount of pressure is applied so casing joints are connected properly.

Down-hole tool operators, sometimes called fishing tool operators, specialize in the use of down-hole tools. They meet with drilling personnel to determine the best method and tool to use, and direct tool assembly and operation.

Pumping services involve the use of high pressure pumping equipment and chemicals, fluids or gases. Different materials are required for different operations, and pump equipment operators usually specialize in a particular type of service:

- **Cementing** services are needed when an oil or gas well is being cased or for remedial work. During the cementing operation, a special mixture of cement, water and additives is pumped through the casing or tubing to seal the casing and secure it in place.
- **Acidizing or fracturing** services may be needed to increase the flow of oil or gas from a well. In acidizing, a strong acid such as hydrochloric acid is pumped into the well to open flow channels in the rock. In fracturing, a treating fluid containing granular material (called sand) is pumped under pressure into the well to fracture the underground rock formation, create channels in the rock formation and improve production.
- **Nitrogen injection** services involve pumping nitrogen gas in combination with acidizing/fracturing fluids into wells to increase the flow of oil or gas, displace fluid from the well bore or pressure test well heads and tubing.

Depending on the job, pump equipment operators may have additional responsibilities such as mixing materials.

Working Conditions

Well service equipment crews often work out of central field stations. Field stations are located throughout the province, often in towns or cities near major drilling or production locations.

Specialized services may be required at any time of the day or night so well service equipment operators usually work on a 24 hour on-call basis. They must do a lot of travelling, frequently work long hours and may be required to lift items weighing up to 25 kilograms.

Much of the work is performed outdoors exposed to all types of weather conditions and the dirt, dust, noise and fumes common around rigs. Because the work is potentially hazardous, safety is a primary concern for everyone on a rig. Hazards include:

- working on wet, slippery rig floors
- working near or with heavy tools and moving machinery
- exposure to chemical substances such as drilling mixture additives.

Personal Characteristics

Well service equipment operators need the following characteristics:

- good communication skills (to understand and give clear, concise directions)
- initiative
- good analytical and decision-making skills
- physical strength and stamina
- the ability to work efficiently and effectively under pressure
- the ability to pay close attention to detail
- the ability to work well alone and with other people.

They should enjoy operating machinery and complex equipment, having clear rules and guidelines for their work, and solving problems.

Educational Requirements

Well service equipment operators should have at least a **high school diploma** combined with the ability and desire to learn quickly and put into practice what they have learned. Related post-secondary education and experience on a drilling rig crew or a service rig crew are definite assets. For more information, see the Drilling Rig Leasehand/Floorhand, Service Rig Personnel and Rig Technician occupational profiles.

Pump equipment operators often learn through special company training programs and on-the-job experience. They transport and use materials and gases that may be highly corrosive or poisonous (hazardous if incorrectly handled) so they are usually required to have:

- an Alberta Class 1 operator's license with air or heavy truck endorsement and no more than six demerits
- certificates in first aid, hydrogen sulphide safety (H2S Alive), blowout prevention, transportation of dangerous goods (TDG), Waste Hazard Material Information System (WHMIS) and cryogenic safety.

Some employers require acidizing operators to have related post-secondary education such as a two year diploma or four year degree in petroleum engineering (for more information, see the Petroleum Engineer and Petroleum Engineering Technologist occupational profiles).

Employment and Advancement

(section revised JANUARY 2006)

Well service equipment operators are employed by contractors in the oil and gas industry. They may start as helpers and, after on-the-job experience and in-house courses, move into operator positions.

Pump equipment operators usually specialize in one type of operation and may advance to the position of field supervisor. Those who are knowledgeable about all types of pumping operations and have leadership skills may advance to the position of station manager.

Well service equipment operators are part of the larger National Occupational Classification 8412: Oil and Gas Well Drilling Workers and Services Operators. In Alberta, most people employed in this classification work in the **Oil and Gas Extraction** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the Oil and Gas Extraction industry)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 10,350 Albertans are employed in the Oil and Gas Well Drilling Workers and Services Operators occupational group which is expected to grow 2.5 to 3.5 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 250 to 370 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since well service equipment operators form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for well service equipment operators.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Oil and Gas Well Drilling Workers and Services Operators occupational group working part-time or full-time earned from **$24,800 to $257,000 a year.** The average salary was **$60,100 a year.**

Other Sources of Information

Canadian Association of Oilwell Drilling Contractors (CAODC) website: www.caodc.ca

Petroleum Human Resources Council of Canada (PHRCC) website: www.petrohrsc.ca

Enform (formerly Petroleum Industry Training Service and Canadian Petroleum Safety Council) website: www.enform.ca

Petroleum Services Association of Canada (PSAC) website: www.psac.ca

Related Occupational Profiles

Blaster
Crane and Hoisting Equipment Operator
Drilling and Service Rig Managers
Drilling Rig Leasehand/Floorhand
Heavy Equipment Operator
Oil and Gas Well Loggers and Testers
Rig Technician
Service Rig Personnel

Related High School Subjects

Community Health; Energy and Mines; Mathematics; Mechanics; Physical Education; and Science (Chemistry; and Physics)

Related Post-Secondary Fields of Study

Engineering and Science Technologies; Engineering, Architecture and Related Studies; and Trades, Industrial and Related Training

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Wildland Firefighter

Produced FEBRUARY 2004

Wildland firefighters work in crews to suppress fires in remote locations.

NOC Number(s): 8422
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus below average occupational growth in Alberta
Interests: **O M i**

Duties

Wildland firefighters work in several different types of wildland firefighting crews:

- **Helitack Crews - Type 1 Rappel** are specialised crews based in Edmonton that provide initial attack and support where they are needed. Helitack is an abbreviation for helicopter attack.
- **Helitack Crews - Type 1** are mobile, highly trained initial attack and support crews that are usually based in Wildfire Management Areas. They use both ground and helicopter transportation to get to where they are needed.
- **Sustained Action Crews - Type 2** are intermediate level firefighting crews that often include post-secondary students and people associated with First Nations Aboriginal communities, Metis settlements and communities. They are employed by contractors to suppress spreading fires that require the efforts of many units.
- **Sustained Action Crews - Type 3** have basic training. They mop up to contain or extinguish hot spots after a fire is under control and provide additional support where needed.

Duties and responsibilities vary from one type of crew to another but, in general, wildland firefighters:

- identify parts of a fire (eg. head, flank , rear, anchor point), escape routes and safety zones
- watch for threats to the control line and counter them
- check in and out at the beginning and end of each shift, and brief and debrief the crew leader
- identify hazards and make other firefighters aware of them
- systematically locate and extinguish hot spots in mop up operations
- fell trees and dig trenches to construct firelines
- use and maintain hand tools and equipment safely and effectively
- rearrange or remove fuels near the fireline
- use drip torches or fuses to conduct burnout operations
- report conditions or activities that seem unsafe or counterproductive
- maintain communications with other crew members and leaders
- look out for the safety and welfare of crew members including themselves
- report injuries and accidents.

Crews may be flown into remote locations to fight fires that are difficult to reach by other means. When required, Type 1 - Rappel crews rappel to the ground from helicopters.

Working Conditions

Wildland firefighters work outdoors in all weather conditions, usually in isolated areas. Their work is dangerous and physically demanding. Occupational hazards include smoke, intense heat, falling trees and branches, wildlife and strong winds that can quickly turn a small fire into an inferno.

Wildland firefighters are required to work on steep and uneven terrain quickly, bend down, stoop and crouch while wearing protective gear and carrying heavy equipment. They carry and use heavy equipment such as hand tools, chain saws, water pumps and hoses, often for long periods of time.

Wildland firefighters may be required to work up to 24 day shifts and may be relocated anywhere in the province as needed.

Personal Characteristics

Wildland firefighters need the following characteristics:

- a safety conscious attitude
- excellent health and physical fitness
- the physical strength and agility required to climb and balance when moving over rough terrain
- good spatial perception and awareness of what is happening around them
- good communication and basic analytical skills
- an interest in working outdoors
- the ability to work effectively with a team under stressful conditions
- the ability to react quickly to the unexpected.

They should enjoy having routine, organized work that is punctuated by periods of intense activity, and technical activities such as operating two-way radios and meteorological instruments.

Educational Requirements

In Alberta, wildland firefighters must successfully complete a training program approved by **Alberta Sustainable Resource Development**. All applicants must complete a physical fitness test and complete an interview before they are accepted for training. There is a weight limitation for individuals on crews that may be transported by helicopter.

- **Sustained Action Crews - Type 3** complete a seven day course. Instruction covers radio operation, equipment use/maintenance, map and compass reading, firefighting methods, fire behaviour, helicopter safety, pump and power saw training, and bear safety.
- **Sustained Action Crews - Type 2** are recruited and selected in consultation with local First Nations Aboriginal communities and Metis settlements by a local contractor. The contractor is responsible for providing an approved two week training course. Candidates must have valid standard first aid certificates and Class 5 driver's licences. Courses are conducted at various times throughout the year and co-ordinated by local contractors.
- **Helitack Crews - Type 1** are hired after successfully completing a two week training course at the **Hinton Training Centre**. Prior to training, candidates must have a valid standard first aid certificate with CPR, a valid Class 5 Alberta driver's licence and current abstract, and a high school diploma or equivalent.
- **Helitack Crew - Type 1 Rappel** members are selected after an interview and physical fitness test. Prior to training camp, candidates must have a valid standard first aid certificate with CPR, a valid Class 5 Alberta driver's licence and current abstract, and a high school diploma or equivalent.

All firefighters must be at least 18 years of age and pass a rigorous physical fitness test prior to and during each fire season. Those interested in a lifelong career in forest fire fighting should complete a forestry-related post-secondary program. For more information, see the Forest Technician, Forest Technologist and Forester occupational profiles.

Employers may prefer applicants who have experience as a logging or forestry labourer. A chain saw certificate, defensive driving certificate, transportation of dangerous good permit or radio operator's licence is a definite asset.

Employment and Advancement

Wildland firefighters are employed by **Alberta Sustainable Resource Development** and contractors. Most are employed on a seasonal basis from early April through late August.

The province of Alberta maintains a complement of about 3,000 certified firefighters. Many move on to full-time work in other fields so employment turnover is high in this occupation.

Salary

(section revised OCTOBER 2005)

Rates of pay for certified wildland firefighters range from **$9.33 to $19.27 an hour (2004 figures).**

Other Sources of Information

Alberta Sustainable Resource Development's Forest Protection Seasonal Employment website: www3.gov.ab.ca/srd/wildfires/fpd/semp.cfm

Canadian Interagency Forest Fire Centre website: www.ciffc.ca

Canadian Wildland Fire Information System website: fire.nofc.cfs.nrcan.gc.ca/en/index_e.php

Hinton Training Centre website: www3.gov.ab.ca/srd/forests/resedu/etc

International Association of Wildland Fire website: www.iawfonline.org

Related Occupational Profiles: Firefighter, Forest Technician

Related Occupational Profiles

Firefighter
Forest Technician

Related High School Subjects

Community Health; Forestry; Language Arts; Logistics; Physical Education; and Wildlife

Related Post-Secondary Fields of Study

Social, Community and Protective Services

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Wireline Field Supervisor

Produced SEPTEMBER 2005

Wireline field supervisors direct the work of wireline operators and collect and process data from wireline operations.

NOC Number(s): 8222
Minimum Education: Education/training requirements vary
Employment Outlook: Employment turnover plus above average occupational growth in Alberta
Interests: **D i o**

Duties

Wireline operations draw their name from the slender, flexible, metal cable used to lower special instruments into oil and gas wells. Different types of wirelines are required for different types of work.

Electric lines, often called e-lines, have a braided outer line with a wire running through the middle. Protected from the often harsh environment of a well, the wire conducts electricity from a mobile generator to power instruments attached to the end of the line. E-lines are used for operations such as production logging, perforating and pipe recovery.

Slicklines are used for temperature and pressure surveys, and downhole completion operations.

In general, wireline crews lower, operate and raise instruments, tools and equipment such as:

- sophisticated electrical logging equipment (e-line)
- perforating guns which, when detonated, perforate well casing and permit oil and gas to flow into the well (generally e-line)
- downhole plugs
- fishing tools used to retrieve broken or lost wire or equipment.

Prior to wireline operations, field supervisors:

- assess each unique situation
- anticipate problems
- determine the appropriate method to complete the job
- decide what equipment to use
- consult and co-ordinate their work with other supervisors and managers.

During wireline operations, field supervisors often work inside a mobile unit that houses complex computer equipment. From this unit, they direct wireline operators while they lower, raise and position the special instruments or tools. E-line supervisors also interpret data received during wireline operations and process data for permanent records. Slickline operators may provide downhole pressure information or fluid levels.

Precision and accuracy in the direction of wireline operations is extremely important and involves a great deal of skill.

Working Conditions

Wireline field supervisors work outdoors and in mobile units in the field. Their hours of work, the location of the job and the amount of travel required vary with the company and type of job contracted. Long hours and extensive travel are not uncommon. In Alberta, oil and gas wells may be located near major centres, around small communities or in remote areas.

Personal Characteristics

Wireline field supervisors need the following characteristics:

- good communication and interpersonal skills
- good organizational skills
- good decision-making skills and a willingness to accept responsibility for decisions

- the ability to direct the work of others and work effectively in a team environment.

They should enjoy supervising and co-ordinating the work of others, solving problems and working with tools, instruments, equipment and machinery.

Educational Requirements

Employers generally require wireline field supervisors to have at least two or three years of experience as wireline operators. E-line supervisors need a working knowledge of electrical circuits and load calculations.

New employees generally take courses in physics, interpretation, software, safety and general operating procedures, and work with experienced wireline operators and field engineers until they are qualified to run their own truck. It generally takes six to nine months before trainees are ready to break out (work without direct supervision).

For information about related two year diploma programs, see the Electrical Engineering Technologist, Electronics Engineering Technologist and Mechanical Engineering Technologist occupational profiles.

Employment and Advancement

(section revised JANUARY 2006)

Wireline field supervisors are employed by:

- companies that specialize in wireline activities
- oil field service companies that provide wireline services as part of their operation.

Wireline field supervisors usually start in junior positions and advance to the position of field supervisor.

Supervisors who are experienced and knowledgeable in wireline services may advance to the position of station manager and eventually to senior management. Or, wireline field supervisors may specialize in one area (e.g. wireline work in open hole or cased hole oil and gas wells or in production logging operations) and work as consultants for wireline service companies.

Wireline field supervisors may have the opportunity to work overseas to gain international experience in field work or management related work.

Wireline field supervisors are part of the larger National Occupational Classification 8222: Oil and Gas Drilling and Service Supervisors. In Alberta, most people employed in this classification work in the **Oil and Gas Extraction** industry.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment in the Oil and Gas Extraction industry (for example, demand for oil and gas products, technological changes)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 13,000 Albertans are employed in the Oil and Gas Drilling and Service Supervisors occupational group which is expected to grow 2.2 to 3.2 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 280 to 420 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since wireline field supervisors form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for wireline field supervisors.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

(section revised OCTOBER 2005)

Salaries for wireline field supervisors vary considerably.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the Oil and Gas Drilling and Service Supervisors occupational group working part-time or full-time earned from **$35,900 to $265,500 a year.** The average salary was **$87,600 a year.**

Other Sources of Information

Canadian Association of Oilwell Drilling Contractors (CAODC) website: www.caodc.ca

Small Explorers and Producers Association of Canada (SEPAC) website: www.sepac.ca

Related Occupational Profiles

Drilling and Service Rig Managers
Oil and Gas Well Loggers and Testers

Related High School Subjects

Electro-Technologies; Energy and Mines; Information Processing; Language Arts; Mathematics; and Science (Chemistry; and Physics)

Related Post-Secondary Fields of Study

Engineering and Science Technologies; Engineering, Architecture and Related Studies; and Sciences

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For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Word Processing Operator

Produced OCTOBER 2005

Word processing operators use computer programs to produce, store and print documents such as letters, reports and tables.

NOC Number(s): 1411
Minimum Education: High school diploma
Employment Outlook: Employment turnover plus below average occupational growth in Alberta
Interests: **O M i**

Duties

Working from hand written notes, printed copy or voice recordings, word processing operators:

- use a computer keyboard to enter text or data
- arrange documents in proper formats
- proofread and edit documents
- store and print documents
- electronically sort and compile text and numerical data
- prepare and update printouts such as invoices and reports
- maintain a filing and storage system for discs or tapes
- retrieve, update and merge documents as required.

Working Conditions

Word processing operators work in an office environment, often sitting for long periods of time. The work may be detailed and much of it is repetitious.

Most word processing operators work standard weekday hours. In large law firms, they may work evening or night shifts. Overtime may be required during busy periods.

Personal Characteristics

Word processing operators need the following characteristics:

- manual dexterity and the ability to concentrate
- the ability to pay attention to detail and proofread (see what is there as opposed to what should be there)
- good organizational skills and the ability to handle a variety of different projects and complete them on time
- the ability to work well with others particularly document authors.

They should enjoy:

- working with equipment such as computers, printers and scanners
- taking a methodical approach to compiling information
- experimenting with different ways to format documents.

Educational Requirements

Although there is no standard minimum education requirement for word processing operators, most employers require **at least high school graduation and a minimum typing speed of 60 words per minute with a high degree of accuracy.** Some employers require a minimum of 80 words per minute. Word processing operators also need:

- a good knowledge of grammar and punctuation, and how to organize and format documents such as reports, letters, charts and financial statements

- proficiency in the use of the latest word processing and related software
- the ability to import and combine information from one software application into another (e.g. import information from spreadsheets to word processing programs).

High school students who have the opportunity to learn word processing techniques may be able to find work as word processing operators after graduation. Some employers provide training on the job.

Colleges, technical institutes and private vocational schools throughout Alberta offer related full-time education programs and continuing education courses. For a listing of post-secondary institutions, see the Administrative Assistant occupational profile. Programs vary greatly in content, depth of study, duration, entrance requirements and cost. Prospective students should investigate program suitability and reputation before enroling in a program.

Continuing education programs are often offered on an as needed basis.

For current information about programs, admission requirements and mature student admission policies, please check post-secondary calendars or websites.

Employment and Advancement

(section revised JANUARY 2006)

Word processing operators are employed in very large organizations and in word processing or secretarial companies that offer word processing services to the public.

Experienced word processing operators who have the required office skills may move into other clerical and administrative support positions, or advance to supervisory positions.

Word processing operators are part of the larger National Occupational Classification 1411: General Office Clerks. In Alberta, over 75 per cent of people employed in this classification work in the following industries:

- **Health Care and Social Assistance**
- **Public Administration**
- **Professional and Technical Services**
- **Finance, Insurance and Real Estate**
- **Management, Administrative and Other Support Services**
- **Educational Services**
- **Retail Trade**
- **Construction**
- **Transportation and Warehousing**
- **Wholesale Trade**.

The employment outlook in this occupation will be influenced by a wide variety of factors including:

- trends and **events** affecting overall employment (especially in the industries listed above)
- **location** in Alberta
- **employment turnover** (work opportunities generated by people leaving existing positions)
- **occupational growth** (work opportunities resulting from the creation of new positions that never existed before)
- **size of the occupation.**

Over 16,000 Albertans are employed in the General Office Clerks occupational group which is expected to grow 0.2 to 1.2 per cent each year from 2005 to 2010 in Alberta. It is forecasted that 30 to 200 **new** positions will be created each year **in addition** to job openings created by employment turnover. (**Note**: Since word processing operators form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for word processing operators.)

Employment turnover is expected to increase as members of the baby boom generation retire over the next five to ten years.

Salary

Salaries for word processing operators vary greatly depending on location, the scope and complexity of the responsibilities involved, and the qualifications of the worker.

According to the **2005 Alberta Wage and Salary Survey**, Albertans in the General Office Clerks occupational group working part-time or full-time earned from **$11,300 to $138,500 a year.** The average salary was **$34,400 a year.**

Related Occupational Profiles

Administrative Assistant
Health Information Management Professional
Legal and Realume Reporter
Legal Secretary
Medical Transcriptionist
Paralegal
Pre-Press Technician

Related High School Subjects

Information Processing; and Language Arts

Related Post-Secondary Fields of Study

Clerical and Administrative Support

For more information on career planning, occupations and educational programs, visit the Alberta Learning Information Service (ALIS) website at www.alis.gov.ab.ca, call the Alberta Career Information Hotline toll-free in Alberta at 1-800-661-3753 or 422-4266 in Edmonton (deaf and hard of hearing individuals can call 1-800-232-7215 toll-free for message relay or 422-5283 in Edmonton), or visit an Alberta Human Resources and Employment service centre near you.

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Occupational Profiles Index

Printed February 14, 2006

This index will help you find

1. the title used for a particular occupation, and

2. related profiles that may also interest you.

1. Find the title used for a particular occupation.

"*see*" points from commonly used names to appropriate profiles.

Examples:

Disc Jockey

see Announcer

Goldsmith

see Jeweller

Passenger Agent

see Airline Ticket Agent

2. Find related profiles.

"*see also*" points to occupations with similar duties and responsibilities, working environments or qualification requirements.

Examples:

Airline Ticket Agent

see also Bus Line Ticket Agent, Cashier, Flight Attendant

Announcer

see also Actor, Model, Reporter

Jeweller

see also Gemmologist, Watch Repairer

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1-800 Line Operator
see Call Centre Agent

911 Operator
see Dispatcher

Aboriginal Liaison
see also Community Health Representative, Human Ecologist, Mediator, Mental Health Worker, Public Relations Representative

Accommodation Manager
see also Accountant, Banquet Manager, Executive Housekeeper, Health Service Administrator, Hotel and Motel Desk Clerk, Restaurant Manager

Accountant
see also Accommodation Manager, Accounting Technician, Economist, Internal Auditor, School Business Official, Systems Auditor

Accounting Technician
see also Accountant, Administrative Assistant, Career and Technology Studies Teacher, Financial Planner, Internal Auditor

Actor
see also Announcer, Casting Director, Dancer, Model, Singer

Actuary
see also Demographer, Insurance Underwriter, Mathematician, Operations Research Analyst, Statistician

Acupuncturist
see also Chiropractor, Herbalist, Homeopath, Massage Therapist, Midwife, Naturopathic Doctor, Reflexologist

Addictions Counsellor
see also Child and Youth Care Worker, Community Health Representative, Correctional Services Worker, Educational Counsellor, Family/Marriage Counsellor, Human Ecologist, Life Skills Coach, Mental Health Worker, Parole/Probation Officer, Psychologist, Social Worker

Adjuster
see Insurance Adjuster

Administrative Assistant
see also Accounting Technician, Chiropractic Assistant, Health Information Management Professional, Legal Secretary, Medical Secretary, Receptionist, Unit Clerk, Word Processing Operator

Advertising Account Executive
see also Advertising Copywriter, Management Consultant, Market Research Analyst, Marketing Manager, Public Relations Representative, Sales Representative (Wholesale, Nontechnical)

Advertising Copywriter
see also Advertising Account Executive, Creative Writer, Songwriter

Advertising Manager
see Marketing Manager

Advocate
see Lawyer

Aerial Photographer
see Photographer

Aerobics Instructor
see Fitness Instructor

Aerospace Engineer
see also Aircraft Maintenance Engineer, Canadian Forces Personnel - Commissioned Officer, Electrical Engineer, Mechanical Engineer

Agricultural Commodity Inspector
see also Agricultural Products Processing Machine Operator, Agrologist, Animal Health Technologist, Food Science Technologist, Food Scientist

Agricultural Engineer
see also Environmental Engineer, Mechanical Engineer

Agricultural Engineering Technologist
see Mechanical Engineering Technologist

Agricultural Equipment Technician
see also Heavy Equipment Technician

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see points to the appropriate profile title ***see also*** suggests related profile title(s)

Agricultural Mechanic
see Agricultural Equipment Technician
Agricultural Plant Manager
see Seed Cleaning/Conditioning Plant Manager
Agricultural Products Processing Machine Operator
see also Agricultural Commodity Inspector, Feed Mill Production Worker, Meat Cutter
Agriculture Specialist
see Agrologist
Agrologist
see also Agricultural Commodity Inspector, Biologist, Biotechnologist, Career and Technology Studies Teacher, Ecologist, Entomologist, Environmental Auditor, Environmental Education Specialist, Food Scientist, Forester, Geneticist, Microbiologist, Pharmacologist, Seed Cleaning/Conditioning Plant Manager, Soil Scientist, Technical Sales Representative, Toxicologist
Air Conditioned Transport Mechanic
see Transport Refrigeration Technician
Air Conditioning Mechanic
see Refrigeration and Air Conditioning Mechanic
Air Quality Auditor
see Environmental Auditor
Air Quality Engineer
see Environmental Engineer
Air Quality Technologist
see Pollution Control Technologist
Air Traffic Controller
see also Airline Pilot, Canadian Forces Personnel - Commissioned Officer, Flight Service Specialist
Aircraft Electronics Technologist
see Avionics Technologist
Aircraft Engineer
see Aerospace Engineer
Aircraft Maintenance Engineer
see also Aerospace Engineer, Avionics Technologist, Canadian Forces Personnel - Non Commissioned , Recreation Vehicle Service Technician, Sheet Metal Worker
Airline Pilot
see also Air Traffic Controller, Canadian Forces Personnel - Commissioned Officer, Helicopter Pilot
Airline Ticket Agent
see also Bus Line Ticket Agent, Call Centre Agent, Cashier, Flight Attendant
Airplane Mechanic
see Aircraft Maintenance Engineer
Airplane Pilot
see Airline Pilot
Alarm System Technician
see Security Alarm Installer
Ambulance Attendant
see Emergency Medical Technician - Ambulance
Analytical Chemist
see Chemist
Anatomic Pathologist
see Pathologist
Animal Care Attendant
see also Animal Health Technologist, Farrier, Pet Groomer, Swine Technician
Animal Doctor
see Veterinarian
Animal Health Technologist
see also Agricultural Commodity Inspector, Animal Care Attendant, Pet Groomer, Veterinarian
Animator
see also Cartoonist, Graphic Designer, Illustrator, Interactive Media Developer

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see points to the appropriate profile title ***see also*** suggests related profile title(s)

Announcer
see also Actor, Model, Reporter

Anthropologist
see also Archaeologist, Curator, Linguist, Museum Technician

Apartment Manager
see Building Superintendent

Apiarist
see Beekeeper

Appliance Service Technician
see also Electrical Motor Systems Technician, Electronic Technician, Motorcycle Mechanic, Office Equipment Technician, Outdoor Power Equipment Technician, Recreation Vehicle Service Technician, Refrigeration and Air Conditioning Mechanic, Vending Machine Repairer

Application Programmer
see Computer Programmer

Arbitrator
see also Architect, Judge, Lawyer, Mediator

Arborist
see also Forest Technician, Landscape Architectural Technologist, Landscape Gardener, Nursery Operator, Turfgrass Management Specialist

Archaeologist
see also Anthropologist, Curator, Museum Technician

Architect
see also Arbitrator, Architectural Technologist, Civil Engineer, Interior Designer, Landscape Architect

Architectural Technologist
see also Architect, Drafting Technician, Engineering Design and Drafting Technologist, Geomatics/Surveying Technologist, Industrial Designer, Interior Designer, Landscape Architectural Technologist

Archivist
see also Conservator, Curator, Historian, Librarian

Armed Forces Officer
see Canadian Forces Personnel - Commissioned Officer

Armed Forces Personnel
see Canadian Forces Personnel - Non Commissioned

Art Therapist
see Expressive Arts Therapists

Artificial Limb Designer
see Prosthetist and Orthotist

Artificial Limb Technician
see Prosthetic/Orthotic Technician

Artisan
see Craftsperson

Assessor
see also Personal Property/Equipment Appraiser, Real Estate Appraiser

Asset Protection Officer
see Security Guard

Astronomer
see also Mathematician, Physicist

Athlete
see Professional Athlete

Athletic Coach
see Coach

Athletic Therapist
see also Kinesiologist, Massage Therapist, Recreation Therapist, Sport Medicine Physician

Auctioneer
see also Sales Representative (Wholesale, Nontechnical)

Audio Recording Engineer
see Recording/Sound Engineer

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see points to the appropriate profile title ***see also*** suggests related profile title(s)

Audiologist
see also Hearing Aid Practitioner, Linguist, Speech-Language Pathologist
Audio-Video Technician
see Electronic Technician
Auto Body Technician
see also Automobile Accessories Installer, Automotive Service Technician, Glazier
Auto Detailer
see also Automobile Accessories Installer, Carpet and Upholstery Cleaner, Custodian, Room/Housekeeping Attendant
Auto Driving Instructor
see Driving Instructor
Auto Parts Salesperson
see Parts Technician
Automated Systems Technologist
see also Biomedical Engineering Technologist, Computer Service Technician, Electrical Engineering Technologist, Electronics Engineering Technologist, Mechanical Engineering Technologist
Automobile Accessories Installer
see also Auto Body Technician, Auto Detailer, Electronic Technician, Security Alarm Installer, Upholsterer
Automotive Service Technician
see also Auto Body Technician, Canadian Forces Personnel - Non Commissioned , Career and Technology Studies Teacher, Heavy Equipment Technician
Aviation Engineer
see Aerospace Engineer
Avionics Technologist
see also Aircraft Maintenance Engineer, Canadian Forces Personnel - Non Commissioned , Electrical Engineering Technologist, Electronics Engineering Technologist, Engineering Design and Drafting Technologist
Bacteriologist
see Microbiologist
Baker
see also Chef, Cook, Food Science Technologist
Bakery Machine Operator
see Agricultural Products Processing Machine Operator
Band Instrument Repair Technician
see Musical Instrument Repair Technician
Bank Manager
see Banking/Investment Manager
Bank Teller
see Financial Customer Service Representative
Banking/Investment Manager
see also Credit/Loans Manager, Financial Analyst, Financial Customer Service Representative, Financial Planner, Insurance Agent/Broker, Investment Advisor, Management Consultant, Mortgage Agent
Banquet Manager
see also Accommodation Manager, Caterer, Chef, Food and Beverage Service Supervisor In Formal Dining Rooms, Food Service Supervisor, Restaurant Manager, Special Event Co-ordinator
Barber
see Hairstylist
Barrister
see Lawyer
Bartender
see also Casino Dealer, Food and Beverage Server, Restaurant Manager
Baseball Player
see Professional Athlete
Beef Producer
see Livestock/Poultry Producer

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see points to the appropriate profile title ***see also*** suggests related profile title(s)

Beef Specialist
see Agrologist

Beekeeper
see also Entomologist, Farm Worker/Technician, Market Gardener

Bellhop
see Guest Services Attendant

Bill Collector
see Collection Agent

Binding and Finishing Machine Operators
see also Digital Printing Machine Operator, Pre-Press Technician, Printing Press Operator

Biochemical Engineer
see Biotechnologist

Biochemist
see also Biologist, Biotechnologist, Chemist, Ecologist, Environmental Auditor, Environmental Education Specialist, Forensic Laboratory Analyst, Geneticist, Hazardous Waste Management Technologist, Microbiologist, Pathologist, Physiologist

Biological Oceanographer
see Oceanographer

Biological Technician
see also Food Science Technologist, Forensic Laboratory Analyst, Forest Technician, Hazardous Waste Management Technologist, Hydrometric Technician/Technologist, Medical Laboratory Technologist, Pollution Control Technologist

Biologist
see also Agrologist, Biochemist, Biotechnologist, Conservation Officer, Ecologist, Entomologist, Environmental Auditor, Environmental Education Specialist, Fish and Wildlife Officer, Food Scientist, Forensic Laboratory Analyst, Geneticist, Hazardous Waste Management Technologist, Hydrologist, Hydrometric Technician/Technologist, Interpretive Naturalist, Microbiologist, Park Warden, Pharmacologist, Physiologist, Pollution Control Technologist, Toxicologist

Biomechanist
see Kinesiologist

Biomedical Engineer
see Electrical Engineer

Biomedical Engineering Technologist
see also Automated Systems Technologist, Canadian Forces Personnel - Non Commissioned , Electrical Engineering Technologist, Electronics Engineering Technologist, Mechanical Engineering Technologist

Biomedical Geneticist
see Geneticist

Bioresource Engineer
see Agricultural Engineer

Biosystems Engineer
see Agricultural Engineer

Biotechnologist
see also Agrologist, Biochemist, Biologist, Ecologist, Food Scientist, Geneticist, Microbiologist, Pharmacologist, Physiologist, Toxicologist

Bitumen Extraction Plant Operator
see Refinery/Upgrader Process Operator

Bitumen Upgrading Plant Operator
see Refinery/Upgrader Process Operator

Blackjack Dealer
see Casino Dealer

Blacksmith
see Farrier

Blaster
see also Surface Mining Equipment Operator, Underground Miner, Water Well Driller, Well Service Equipment Operator

Boiler and Pressure Vessel Inspector
see Safety Codes Officer

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see points to the appropriate profile title ***see also*** suggests related profile title(s)

Boilermaker
see also Ironworker, Sheet Metal Worker, Structural Steel and Plate Fitter, Welder
Book Binder
see Binding and Finishing Machine Operators
Bookkeeper
see Accounting Technician
Boom Truck Operator
see Crane and Hoisting Equipment Operator
Botanist
see Biologist
Brewery Machine Operator
see Agricultural Products Processing Machine Operator
Bricklayer
see also Concrete Finisher, Construction Craft Labourer, Lather-Interior Systems Mechanic, Plasterer, Tilesetter
Broadcast Maintenance Technologist
see also Electrical Engineering Technologist, Electronics Engineering Technologist, Telecommunications Engineering Technologist
Broadcaster
see Announcer
Building Inspector
see Safety Codes Officer
Building Manager
see Property Manager
Building Operator
see also Building Superintendent, Custodian, Power Engineer, Property Manager, Recreation Facility Operator
Building Superintendent
see also Building Operator, Carpet and Upholstery Cleaner, Custodian, Executive Housekeeper, Property Manager, Room/Housekeeping Attendant
Building Systems Erector
see Ironworker
Burglar Alarm Installer
see Security Alarm Installer
Bus Driver
see also Chauffeur, Driving Instructor, Taxi Driver, Truck Driver
Bus Line Ticket Agent
see also Airline Ticket Agent, Call Centre Agent, Cashier
Busboy/girl
see Food Service Helper
Business Education Teacher
see Career and Technology Studies Teacher
Business Machine Technician
see Office Equipment Technician
Business Management Consultant
see Management Consultant
Business Manager/Owner
see Retail Store Manager
Business Systems Specialist
see Information Systems Consultant
Butcher
see Meat Cutter
Buyer
see Purchasing Agent
Bylaw Enforcement Officer
see also Canadian Forces Personnel - Non Commissioned , Conservation Officer, Correctional Officer, Customs Inspector, Fish and Wildlife Officer, Park Warden, Police Officer, Private Investigator, Security Guard, Sports Official

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see points to the appropriate profile title ***see also*** suggests related profile title(s)

Cabinetmaker
see also Carpenter, Upholsterer

Cable Splicer
see Communication Technician

CAD Technician
see Drafting Technician

CAD Technologist
see Engineering Design and Drafting Technologist

Call Centre Agent
see also Airline Ticket Agent, Bus Line Ticket Agent, Customer Support Analyst, Dispatcher, Retail Salesperson, Sales Representative (Wholesale, Nontechnical), Telemarketer, Telephone Operator

Canadian Forces Personnel - Commissioned Officer
see also Aerospace Engineer, Air Traffic Controller, Airline Pilot, Canadian Forces Personnel - Non Commissioned , Dentist, Electrical Engineer, Flight Service Specialist, Helicopter Pilot, Human Resources Professional, Lawyer, Meteorologist, Pharmacist, Physician, Physiotherapist, Public Relations Representative, Registered Nurse, Social Worker

Canadian Forces Personnel - Non Commissioned
see also Aircraft Maintenance Engineer, Automotive Service Technician, Avionics Technologist, Biomedical Engineering Technologist, Bylaw Enforcement Officer, Canadian Forces Personnel - Commissioned Officer, Cook, Correctional Officer, Firefighter, Mail Sorter, Medical Laboratory Technologist, Police Officer, Power System Electrician, Private Investigator, Radiological Technologist, Refrigeration and Air Conditioning Mechanic, Telecommunications Engineering Technologist

Captain Waiter
see Food and Beverage Service Supervisor In Formal Dining Rooms

Car Accessories Installer
see Automobile Accessories Installer

Car Body Repairer
see Auto Body Technician

Car Mechanic
see Automotive Service Technician

Cardiologist
see Physician

Cardiology Technologist
see also Diagnostic Medical Sonographer, Electroneurophysiology (ENP) Technologist

Career and Technology Studies Teacher
see also Accounting Technician, Agrologist, Automotive Service Technician, Carpenter, College, Technical or Vocational Instructor, Computer Programmer, Electronics Engineering Technologist, Elementary School Teacher, Engineering Design and Drafting Technologist, Fashion Designer, Hairstylist, Home Economist, Human Ecologist, Private Trainer/Facilitator, Secondary School Teacher, Special Needs Teacher, Welder

Career Counsellor/Advisor
see Career Development Professional

Career Development Professional
see also Educational Counsellor, Home Economist, Human Ecologist, Human Resources Professional, Life Skills Coach, Occupational Therapist, Private Trainer/Facilitator, Psychologist, Social Worker

Carman
see Railway Car Mechanic

Carpenter
see also Cabinetmaker, Career and Technology Studies Teacher, Commercial Diver, Construction Craft Labourer, Glazier, Home Inspector, Roofer, Safety Codes Officer, Safety Officer

Carpet and Upholstery Cleaner
see also Auto Detailer, Building Superintendent, Custodian, Dry Cleaning and Laundry Workers, Room/Housekeeping Attendant

Carpet Layer
see Floorcovering Installer

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see points to the appropriate profile title ***see also*** suggests related profile title(s)

Cartographer
see Geographer
Cartographic Technologist
see Mapping Technologist
Cartoonist
see also Animator, Graphic Designer, Illustrator
Carver
see Craftsperson
Cashier
see also Airline Ticket Agent, Bus Line Ticket Agent, Financial Customer Service Representative, Retail Shelf Stocker
Casino Dealer
see also Bartender, Tour Guide
Casting Director
see also Actor, Film Director, Stage Manager, Theatre Director
Cat Groomer
see Pet Groomer
Cat Operator
see Heavy Equipment Operator
Caterer
see also Banquet Manager, Chef, Cook, Food Service Supervisor, Restaurant Manager, Special Event Co-ordinator
Caterer Helper
see Food Service Helper
Cell Culturist
see Biotechnologist
Cement Finisher
see Concrete Finisher
Central Supply Aide
see Sterile Processing Technician
Certified General Accountant
see Accountant
Certified Management Accountant
see Accountant
Chambermaid
see Room/Housekeeping Attendant
Chartered Accountant
see Accountant
Chauffeur
see also Bus Driver, Driving Instructor, Taxi Driver, Truck Driver
Checkout Clerk
see Cashier
Chef
see also Baker, Banquet Manager, Caterer, Cook
Chemical Engineer
see also Chemical Engineering Technologist, Chemist, Environmental Auditor, Environmental Engineer, Instrument Technician, Instrumentation Engineering Technologist, Petroleum Engineer
Chemical Engineering Technologist
see also Chemical Engineer, Chemical Technologist, Industrial Engineering Technologist, Petroleum Engineering Technologist, Pollution Control Technologist, Water and Wastewater Treatment Plant Operator
Chemical Oceanographer
see Oceanographer
Chemical Technologist
see also Chemical Engineering Technologist, Food Science Technologist, Forensic Laboratory Analyst, Pollution Control Technologist, Water and Wastewater Treatment Plant Operator

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see points to the appropriate profile title ***see also*** suggests related profile title(s)

Chemist
see also Biochemist, Chemical Engineer, Environmental Auditor, Environmental Education Specialist, Environmental Engineer, Food Scientist, Forensic Laboratory Analyst, Hazardous Waste Management Technologist, Pharmacologist, Soil Scientist, Toxicologist

Chief Administrative Officer
see Municipal Administrator

Child and Youth Care Worker
see also Addictions Counsellor, Correctional Services Worker, Early Childhood Educator, Educational Assistant, Home Economist, Human Ecologist, Life Skills Coach, Mental Health Worker, Parole/Probation Officer, Psychologist, Rehabilitation Practitioner, Social Worker

Children's Medical Specialist
see Pediatrician

Chiropractic Assistant
see also Administrative Assistant, Occupational Therapist Assistant, Physical Therapy Assistant

Chiropractor
see also Acupuncturist, Naturopathic Doctor, Optometrist, Physician, Podiatrist

Choir Director
see Choral Conductor

Choral Conductor
see also Composer, Music Copyist, Orchestra/Band Conductor, Orchestrator/Arranger, Singer, Songwriter

Choreographer
see also Dancer, Producer - Film, Radio, Television and Theatre, Theatre Director

Cinematographer
see also Film Director, Lighting Designer, Photographer, Producer - Film, Radio, Television and Theatre, Television Camera Operator

Circuit Board Assembler
see Electronics Assemblers and Fabricators

Circulation Assistant
see Library Clerk

City Editor
see Editor

City Planner
see Urban, Regional and Park Planners

Civil Engineer
see also Architect, Civil Engineering Technologist, Electrical Contractor, Environmental Engineer, Geomatics/Surveying Engineer, Hydrologist, Soil Scientist, Urban, Regional and Park Planners

Civil Engineering Technologist
see also Civil Engineer, Drafting Technician, Electrical Contractor, Engineering Design and Drafting Technologist, Geomatics/Surveying Technologist, Mapping Technologist, Steel Detailer, Technical Sales Representative

Claims Collector
see Collection Agent

Clerical Assistant
see Administrative Assistant

Clerk of the Court
see Judicial Clerk

Client Support Analyst
see Customer Support Analyst

Climatologist
see Meteorologist

Clinical Dietitian
see Dietitian

Clinical Engineering Technologist
see Biomedical Engineering Technologist

Coach
see also Fitness Instructor, Kinesiologist, Professional Athlete, Sports Official

Coin Operated Machine Stocker
see Vending Machine Route Worker
Coin Operated Machine Technician
see Vending Machine Repairer
Collection Agent
see also Credit/Loans Manager, Utility Clerk
College Counsellor
see Educational Counsellor
College Instructor
see College, Technical or Vocational Instructor
College, Technical or Vocational Instructor
see also Career and Technology Studies Teacher, English as a Second Language Teacher - Adults, Private Trainer/Facilitator, Secondary School Teacher, University Professor
Combined Laboratory and X-Ray Technologist
see also Diagnostic Medical Sonographer, Medical Laboratory Technologist, Radiological Technologist
Comic Strip Artist
see Cartoonist
Commercial Artist
see Graphic Designer
Commercial Diver
see also Carpenter, Materials Engineering Technologist, Welder
Commercial Photographer
see Photographer
Commissioned Officer
see Canadian Forces Personnel - Commissioned Officer
Communication Assistant
see Speech-Language Pathologist Assistant
Communication Technician
see also Electrician, Power Lineman, Power System Electrician, Telecommunications Engineering Technologist
Communications Engineer
see Electrical Engineer
Communications Officer
see Public Relations Representative
Community Dietitian
see Dietitian
Community Health Nurse
see also Community Health Representative, Gerontological Specialist, Licensed Practical Nurse, Nurse Practitioner, Occupational Health Nurse, Psychiatric Nurse, Public Health Inspector, Registered Nurse, Respiratory Therapist
Community Health Representative
see also Aboriginal Liaison, Addictions Counsellor, Community Health Nurse, Life Skills Coach, Mental Health Worker, Rehabilitation Practitioner, Social Worker
Community Planner
see Urban, Regional and Park Planners
Community Recreation Co-ordinator
see Recreation Co-ordinator/Supervisor
Community Relations Liaison
see Aboriginal Liaison
Community Relations Manager
see Marketing Manager
Community Relations/Resource Co-ordinator
see Volunteer Manager
Composer
see also Choral Conductor, Instrumental Musician, Music Copyist, Orchestra/Band Conductor, Orchestrator/Arranger, Songwriter
Comptroller
see Accountant

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see points to the appropriate profile title ***see also*** suggests related profile title(s)

Computer and Network Operator
see also Computer Engineer, Computer Programmer, Customer Support Analyst, Interactive Media Developer, Systems Security Analyst, Systems Tester, Web Designer, Web Technician
Computer Database Administrator
see Data Administrator
Computer Database Analyst
see Database Analyst
Computer Engineer
see also Computer and Network Operator, Electrical Engineer, Software Engineer, Technical Sales Representative
Computer Engineering Technologist
see Electronics Engineering Technologist
Computer Hardware Engineer
see Computer Engineer
Computer Programmer
see also Career and Technology Studies Teacher, Computer and Network Operator, Customer Support Analyst, Database Analyst, Information Systems Consultant, Information Systems Quality Assurance Analyst, Interactive Media Developer, Software Engineer, Systems Auditor, Systems Security Analyst, Systems Tester, Web Designer, Web Technician
Computer Security Specialist
see Systems Security Analyst
Computer Service Technician
see also Automated Systems Technologist, Electrical Engineering Technologist, Electronics Assemblers and Fabricators, Electronics Engineering Technologist, Office Equipment Technician
Computer Software Engineer
see Software Engineer
Computer Systems Auditor
see Systems Auditor
Concrete Finisher
see also Bricklayer, Construction Craft Labourer, Lather-Interior Systems Mechanic, Plasterer, Tilesetter
Conductor
see Orchestra/Band Conductor
Conference Planner
see Special Event Co-ordinator
Conservation Biologist
see Biologist
Conservation Officer
see also Biologist, Bylaw Enforcement Officer, Fish and Wildlife Officer, Park Warden, Police Officer
Conservator
see also Archivist, Craftsperson, Curator, Human Ecologist, Painter/Printmaker, Sculptor
Construction Blaster
see Blaster
Construction Co-ordinator
see Civil Engineering Technologist
Construction Craft Labourer
see also Bricklayer, Carpenter, Concrete Finisher, Electrician, Plumber
Construction Engineer
see Civil Engineer
Construction Inspector
see Safety Codes Officer
Contact Lens Technician
see Optical Technician
Control Room Operator
see Gas Pipeline Operators and Maintenance Workers
Control Systems Engineer
see Electrical Engineer

Convention Planner
see Special Event Co-ordinator

Cook
see also Baker, Canadian Forces Personnel - Non Commissioned , Caterer, Chef, Meat Cutter

Copier Operator
see Digital Printing Machine Operator

Copywriter
see Advertising Copywriter

Correctional Officer
see also Bylaw Enforcement Officer, Canadian Forces Personnel - Non Commissioned , Police Officer, Private Investigator

Correctional Services Worker
see also Addictions Counsellor, Child and Youth Care Worker, Life Skills Coach, Parole/Probation Officer, Social Worker

Corrosion Engineer
see Materials/Metallurgical Engineer

Cosmetician
see also Electrologist, Esthetician, Make-Up Artist, Nail Technician, Retail Salesperson, Sales Representative (Wholesale, Nontechnical)

Costume Designer
see also Fashion Designer, Home Economist, Human Ecologist, Lighting Designer, Set Designer, Visual Merchandiser

Counselling Psychologist
see Psychologist

Courier
see Messenger/Courier

Court Reporter
see Legal and Realtime Reporter

Couturier
see Fashion Designer

Craftsperson
see also Conservator, Home Economist, Human Ecologist, Industrial Designer, Jeweller, Lighting Designer, Musical Instrument Repair Technician, Painter/Printmaker, Sculptor, Set Designer

Crane and Hoisting Equipment Operator
see also Heavy Equipment Operator, Power Lineman, Water Well Driller, Well Service Equipment Operator

Creative Writer
see also Advertising Copywriter, Critic, Editor, Public Relations Representative, Songwriter, Technical Writer

Credit/Loans Manager
see also Banking/Investment Manager, Collection Agent, Mortgage Agent

Cribber
see Carpenter

Crime Laboratory Analyst
see Forensic Laboratory Analyst

Crime Scene Investigator
see Police Officer

Critic
see also Creative Writer, Editor, Reporter

Crop Specialist
see Agrologist

CTMP Mill Operator
see Pulpmill Operator

Cultural Interpreter
see Heritage Interpreter

Curator
see also Anthropologist, Archaeologist, Archivist, Conservator, Heritage Interpreter, Historian, Museum Technician

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see points to the appropriate profile title ***see also*** suggests related profile title(s)

Custodian
see also Auto Detailer, Building Operator, Building Superintendent, Carpet and Upholstery Cleaner, Room/Housekeeping Attendant
Customer Service Technician
see Office Equipment Technician
Customer Support Analyst
see also Call Centre Agent, Computer and Network Operator, Computer Programmer, Systems Tester, Web Designer, Web Technician, Webmaster
Customs Broker
see also Insurance Adjuster, Insurance Underwriter, Personal Property/Equipment Appraiser, Purchasing Agent
Customs Inspector
see also Bylaw Enforcement Officer, Foreign Service Officer, Immigration Officer, Security Guard
Dairy Processing Machine Operator
see Agricultural Products Processing Machine Operator
Dairy Producer
see also Farm Worker/Technician, Grain and Forage Crop Producer, Livestock/Poultry Producer, Market Gardener
Dairy Products Inspector
see Agricultural Commodity Inspector
Dance Critic
see Critic
Dance Designer
see Choreographer
Dance Therapist
see Expressive Arts Therapists
Dancer
see also Actor, Choreographer
Data Administrator
see also Database Analyst, Information Systems Consultant, Management Consultant, Software Engineer, Systems Auditor, Web Designer, Webmaster
Database Analyst
see also Computer Programmer, Data Administrator, Information Systems Quality Assurance Analyst, Interactive Media Developer, Systems Auditor, Systems Tester, Web Designer
Day Care Worker
see Early Childhood Educator
Demographer
see also Actuary, Economist, Geographer, Mathematician, Operations Research Analyst, Sociologist, Statistician
Dental Assistant
see also Dental Hygienist, Dental Technologist, Dentist, Ophthalmic Assistant, Physical Therapy Assistant, Radiological Technologist, Speech-Language Pathologist Assistant
Dental Hygienist
see also Dental Assistant, Dental Technologist, Dentist
Dental Laboratory Technologist
see Dental Technologist
Dental Office Receptionist
see Receptionist
Dental Technologist
see also Dental Assistant, Dental Hygienist, Dentist, Denturist, Prosthetist and Orthotist
Dentist
see also Canadian Forces Personnel - Commissioned Officer, Dental Assistant, Dental Hygienist, Dental Technologist, Optometrist, Physician
Denturist
see also Dental Technologist, Prosthetic/Orthotic Technician
Dermatologist
see Physician

Desk Clerk
see Hotel and Motel Desk Clerk
Detective
see Private Investigator
Development Director
see Fundraiser
Developmental Geneticist
see Geneticist
Diagnostic Medical Sonographer
see also Cardiology Technologist, Combined Laboratory and X-Ray Technologist, Electroneurophysiology (ENP) Technologist, Magnetic Resonance Technologist, Nuclear Medicine Technologist, Radiation Therapist, Radiological Technologist, Respiratory Therapist
Diemaker
see Tool and Die Maker
Dietary Technician
see Food and Nutrition Manager
Dietitian
see also Food and Nutrition Manager, Food Scientist, Food Service Supervisor, Restaurant Manager
Digital Printing Machine Operator
see also Binding and Finishing Machine Operators, Pre-Press Technician, Printing Press Operator
Digital Systems Engineer
see Electrical Engineer
Dining Room Attendant
see Food Service Helper
Diplomat
see Foreign Service Officer
Direct Distributor
see also Retail Salesperson, Telemarketer
Disc Jockey
see Announcer
Dishwasher
see Kitchen Helper and Food Assembler
Dispatcher
see also Call Centre Agent, Taxi Driver, Traffic Co-ordinator, Utility Clerk
Distribution Manager
see Traffic Manager
Diver
see Commercial Diver
Dog Groomer
see Pet Groomer
Dog Kennel Attendant
see Animal Care Attendant
Domestic Housekeeper
see also Nanny, Personal Care Attendant, Room/Housekeeping Attendant
Door Person
see Guest Services Attendant
Down-Stream Processing Engineer
see Biotechnologist
Drafting Technician
see also Architectural Technologist, Civil Engineering Technologist, Engineering Design and Drafting Technologist, Steel Detailer
Dragline Equipment Operator
see Surface Mining Equipment Operator
Drama Therapist
see Expressive Arts Therapists

Drilling and Service Rig Managers
see also Drilling Rig Leasehand/Floorhand, Electronics Engineering Technologist, Oil and Gas Well Loggers and Testers, Rig Technician, Seismic Observer, Service Rig Personnel, Well Service Equipment Operator, Wireline Field Supervisor

Drilling Rig Leasehand/Floorhand
see also Drilling and Service Rig Managers, Oil and Gas Well Loggers and Testers, Rig Technician, Service Rig Personnel, Well Service Equipment Operator

Driving Instructor
see also Bus Driver, Chauffeur, Private Trainer/Facilitator, Taxi Driver, Truck Driver

Drug and Alcohol Addiction Counsellor
see Addictions Counsellor

Druggist
see Pharmacist

Dry Cleaning and Laundry Workers
see also Carpet and Upholstery Cleaner, Room/Housekeeping Attendant

Drywaller
see Lather-Interior Systems Mechanic

Early Childhood Educator
see also Child and Youth Care Worker, Educational Assistant, Elementary School Teacher, Nanny

Ecologist
see also Agrologist, Biochemist, Biologist, Biotechnologist, Entomologist, Food Scientist, Forester, Geneticist, Interpretive Naturalist, Microbiologist, Pharmacologist, Physiologist, Toxicologist

Econometrician
see Economist

Economist
see also Accountant, Demographer, Management Consultant, Mathematician, Statistician

Editor
see also Creative Writer, Critic, Reporter, Technical Writer

Editorial Cartoonist
see Cartoonist

Educational Assistant
see also Child and Youth Care Worker, Early Childhood Educator, Elementary School Teacher, Occupational Therapist Assistant, Rehabilitation Practitioner, Speech-Language Pathologist Assistant

Educational Counsellor
see also Addictions Counsellor, Career Development Professional, Special Needs Teacher

Electrical Contractor
see also Civil Engineer, Civil Engineering Technologist, Electrical Engineer, Electrical Engineering Technologist, Electrician

Electrical Engineer
see also Aerospace Engineer, Canadian Forces Personnel - Commissioned Officer, Computer Engineer, Electrical Contractor, Electrical Engineering Technologist, Electronics Engineering Technologist

Electrical Engineering Technologist
see also Automated Systems Technologist, Avionics Technologist, Biomedical Engineering Technologist, Broadcast Maintenance Technologist, Computer Service Technician, Electrical Contractor, Electrical Engineer, Electrician, Electronics Engineering Technologist, Engineering Design and Drafting Technologist

Electrical Motor Systems Technician
see also Appliance Service Technician, Motorcycle Mechanic, Outdoor Power Equipment Technician, Power System Electrician

Electrical Power Lineman
see Power Lineman

Electrical Rewind Mechanic
see Electrical Motor Systems Technician

Electrical Safety Inspector
see Safety Codes Officer

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see points to the appropriate profile title ***see also*** suggests related profile title(s)

Electrician
see also Communication Technician, Construction Craft Labourer, Electrical Contractor, Electrical Engineering Technologist, Home Inspector, Lighting Technician, Power Lineman, Power System Electrician, Recreation Vehicle Service Technician, Safety Codes Officer, Safety Officer, Security Alarm Installer

Electroencephalogram (EEG) Technologist
see Electroneurophysiology (ENP) Technologist

Electrologist
see also Cosmetician, Esthetician, Hairstylist, Nail Technician

Electromyography (EMG) Technologist
see Electroneurophysiology (ENP) Technologist

Electroneurophysiology (ENP) Technologist
see also Cardiology Technologist, Diagnostic Medical Sonographer, Magnetic Resonance Technologist

Electronic Technician
see also Appliance Service Technician, Automobile Accessories Installer, Electronics Engineering Technologist, Office Equipment Technician, Vending Machine Repairer

Electronics Assemblers and Fabricators
see also Computer Service Technician, Optical Technician

Electronics Engineer
see Electrical Engineer

Electronics Engineering Technologist
see also Automated Systems Technologist, Avionics Technologist, Biomedical Engineering Technologist, Broadcast Maintenance Technologist, Career and Technology Studies Teacher, Computer Service Technician, Drilling and Service Rig Managers, Electrical Engineer, Electrical Engineering Technologist, Electronic Technician, Engineering Design and Drafting Technologist, Seismic Observer, Telecommunications Engineering Technologist

Elementary School Teacher
see also Career and Technology Studies Teacher, Early Childhood Educator, Educational Assistant, Secondary School Teacher, Special Needs Teacher

Elevator Constructor

E-line Operations Supervisor
see Wireline Field Supervisor

Embalmer
see also Funeral Attendant, Funeral Director

Emergency Medical Responder
see also Emergency Medical Technician - Ambulance, Emergency Medical Technologist - Paramedic, Firefighter, Police Officer

Emergency Medical Technician - Ambulance
see also Emergency Medical Responder, Emergency Medical Technologist - Paramedic, Firefighter, Police Officer

Emergency Medical Technologist - Paramedic
see also Emergency Medical Responder, Emergency Medical Technician - Ambulance, Firefighter, Police Officer

Emergency Services Dispatcher
see Dispatcher

Employee Benefits Administrator
see Human Resources Professional

Employment Counsellor
see Career Development Professional

Engineering Design and Drafting Technician
see Drafting Technician

Engineering Design and Drafting Technologist
see also Architectural Technologist, Avionics Technologist, Career and Technology Studies Teacher, Civil Engineering Technologist, Drafting Technician, Electrical Engineering Technologist, Electronics Engineering Technologist, Geomatics/Surveying Technologist, Industrial Designer, Mapping Technologist, Mechanical Engineering Technologist, Steel Detailer, Urban, Regional and Park Planners

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see points to the appropriate profile title ***see also*** suggests related profile title(s)

English as a Second Language Teacher - Adults
see also College, Technical or Vocational Instructor, Interpreter, Private Trainer/Facilitator, Secondary School Teacher
Enroute Controller
see Air Traffic Controller
Entomologist
see also Agrologist, Beekeeper, Biologist, Ecologist, Interpretive Naturalist, Microbiologist
Environmental Auditor
see also Agrologist, Biochemist, Biologist, Chemical Engineer, Chemist, Environmental Engineer, Hazardous Waste Management Technologist, Occupational Health and Safety Inspector, Occupational Hygienist, Public Health Inspector
Environmental Designer
see Industrial Designer
Environmental Education Specialist
see also Agrologist, Biochemist, Biologist, Chemist, Interpretive Naturalist, Outdoor Sport/Recreation Guide, Private Trainer/Facilitator
Environmental Engineer
see also Agricultural Engineer, Chemical Engineer, Chemist, Civil Engineer, Environmental Auditor, Geomatics/Surveying Engineer, Hazardous Waste Management Technologist, Hydrologist, Landscape Architect, Occupational Health and Safety Inspector, Pollution Control Technologist
Environmental Geophysicist
see Exploration Geophysicist
Environmental Health Officer
see Public Health Inspector
Equipment Appraiser
see Personal Property/Equipment Appraiser
Ergonomist
see also Industrial Designer, Industrial Engineer, Kinesiologist, Manufacturing Engineer, Occupational Hygienist, Physiotherapist
Escalator Constructor
see Elevator Constructor
Esthetician
see also Cosmetician, Electrologist, Hairstylist, Make-Up Artist, Nail Technician
Ethnologist
see Anthropologist
Event Planner
see Special Event Co-ordinator
Executive Housekeeper
see also Accommodation Manager, Building Superintendent, Room/Housekeeping Attendant
Exercise Physiologist
see Kinesiologist
Exhibit Designer
see also Fashion Designer, Industrial Designer, Museum Technician, Set Designer, Visual Merchandiser
Experimental Psychologist
see Psychologist
Exploration Geophysicist
see also Geological and Geophysical Technologist, Geologist, Hydrologist, Oceanographer, Physicist
Expressive Arts Therapists
see also Mental Health Worker, Occupational Therapist, Psychologist, Recreation Therapist, Social Worker
Exterminator
see Pest Control Operator
Eye Doctor
see Optometrist
Eyecare Assistant/Technician
see Ophthalmic Assistant

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see points to the appropriate profile title ***see also*** suggests related profile title(s)

Eyeglass Technician
see Optical Technician
Facilitator
see Private Trainer/Facilitator
Facility Operator
see Recreation Facility Operator
Family Physician
see Physician
Family/Marriage Counsellor
see also Addictions Counsellor, Life Skills Coach, Mediator, Mental Health Worker, Psychologist, Social Worker
Farm Equipment Engineer
see Agricultural Engineer
Farm Equipment Mechanic
see Agricultural Equipment Technician
Farm Management Specialist
see Agrologist
Farm Marketing Specialist
see Agrologist
Farm Worker/Technician
see also Beekeeper, Dairy Producer, Grain and Forage Crop Producer, Livestock/Poultry Producer, Swine Technician
Farrier
see also Animal Care Attendant
Fashion Designer
see also Career and Technology Studies Teacher, Costume Designer, Exhibit Designer, Home Economist, Human Ecologist, Visual Merchandiser
Fashion Illustrator
see Illustrator
Fashion Model
see Model
Feed Mill Production Worker
see also Agricultural Products Processing Machine Operator
Field Operator (Well Logging and Testing)
see Oil and Gas Well Loggers and Testers
Field Production Operator
see also Gas Pipeline Operators and Maintenance Workers, Oil Pipeline Operators and Maintenance Workers, Refinery/Upgrader Process Operator
Field Service Engineer
see Vending Machine Repairer
Figure Skating Official
see Sports Official
Film Critic
see Critic
Film Director
see also Casting Director, Cinematographer, Producer - Film, Radio, Television and Theatre, Theatre Director
Film Producer
see Producer - Film, Radio, Television and Theatre
Financial Analyst
see also Banking/Investment Manager, Financial Planner, Investment Advisor, Investment Underwriter, Operations Research Analyst
Financial Customer Service Representative
see also Banking/Investment Manager, Cashier
Financial Planner
see also Accounting Technician, Banking/Investment Manager, Financial Analyst, Insurance Agent/Broker, Investment Advisor
Finishing Machine Operator
see Binding and Finishing Machine Operators

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see points to the appropriate profile title ***see also*** suggests related profile title(s)

Firefighter
see also Canadian Forces Personnel - Non Commissioned , Emergency Medical Responder, Emergency Medical Technician - Ambulance, Emergency Medical Technologist - Paramedic, Wildland Firefighter
Fish and Wildlife Officer
see also Biologist, Bylaw Enforcement Officer, Conservation Officer, Police Officer
Fisheries Biologist
see Biologist
Fishing Guide
see Outdoor Sport/Recreation Guide
Fitness Instructor
see also Coach, Golf Professional, Professional Athlete, Recreation and Sport Administrator, Recreation Co-ordinator/Supervisor, Sports Instructor
Flight Attendant
see also Airline Ticket Agent, Food and Beverage Server, Travel Consultant
Flight Service Specialist
see also Air Traffic Controller, Canadian Forces Personnel - Commissioned Officer
Floorcovering Installer
see also Glazier, Insulator, Lather-Interior Systems Mechanic, Painter and Decorator, Roofer, Tilesetter
Floorhand
see Drilling Rig Leasehand/Floorhand
Floral Designer
see also Interior Decorator, Retail Salesperson, Visual Merchandiser
Flour Mill Machine Operator
see Agricultural Products Processing Machine Operator
Folder
see Dry Cleaning and Laundry Workers
Food and Beverage Processing Machine Operator
see Agricultural Products Processing Machine Operator
Food and Beverage Server
see also Bartender, Flight Attendant, Food and Beverage Service Supervisor In Formal Dining Rooms, Food Service Helper, Kitchen Helper and Food Assembler
Food and Beverage Service Supervisor In Formal Dining Rooms
see also Banquet Manager, Food and Beverage Server, Food Service Supervisor, Restaurant Manager
Food and Nutrition Manager
see also Dietitian, Food Service Supervisor
Food Assembler
see Kitchen Helper and Food Assembler
Food Inspector
see Agricultural Commodity Inspector
Food Preparer
see Kitchen Helper and Food Assembler
Food Runner
see Food Service Helper
Food Science Technologist
see also Agricultural Commodity Inspector, Baker, Biological Technician, Chemical Technologist, Food Scientist, Herbalist
Food Scientist
see also Agricultural Commodity Inspector, Agrologist, Biologist, Biotechnologist, Chemist, Dietitian, Ecologist, Food Science Technologist, Geneticist, Home Economist, Microbiologist, Pharmacologist, Physiologist, Public Health Inspector, Toxicologist
Food Service Helper
see also Food and Beverage Server, Kitchen Helper and Food Assembler
Food Service Supervisor
see also Banquet Manager, Caterer, Dietitian, Food and Beverage Service Supervisor In Formal Dining Rooms, Food and Nutrition Manager, Restaurant Manager

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see points to the appropriate profile title ***see also*** suggests related profile title(s)

Foot Doctor
see Podiatrist
Foot Massager
see Reflexologist
Football Official
see Sports Official
Football Player
see Professional Athlete
Foreign Service Officer
see also Customs Inspector, Immigration Officer, Interpreter, Mediator, Political Scientist
Forensic Anthropologist
see Anthropologist
Forensic Laboratory Analyst
see also Biochemist, Biological Technician, Biologist, Chemical Technologist, Chemist, Mechanical Engineer, Microbiologist, Pathologist, Pharmacologist, Physicist, Private Investigator, Toxicologist
Forensic Pathologist
see Pathologist
Forensic Photographer
see Photographer
Forensic Psychologist
see Psychologist
Forest Fire Fighter
see Wildland Firefighter
Forest Fire Lookout
see Forest Technician
Forest Guardian
see Forest Technologist
Forest Products Sawfiler
see Sawfiler
Forest Technician
see also Arborist, Biological Technician, Forest Technologist, Forester, Logging/Forestry Equipment Operators, Wildland Firefighter
Forest Technologist
see also Forest Technician, Forester
Forester
see also Agrologist, Ecologist, Forest Technician, Forest Technologist, Hydrologist
Forestry Equipment Operator
see Logging/Forestry Equipment Operators
Forwarder Operator
see Logging/Forestry Equipment Operators
Framer
see Carpenter
Freelance Editor
see Editor
Freight Receiver/Shipper
see Shipper and Receiver
Front Desk Agent
see Hotel and Motel Desk Clerk
Front-end Loader Operator
see Heavy Equipment Operator
Fruit and Vegetable Processing Machine Operator
see Agricultural Products Processing Machine Operator
Fruit Inspector
see Agricultural Commodity Inspector
Fumigator
see Pest Control Operator

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see points to the appropriate profile title ***see also*** suggests related profile title(s)

Fundraiser
see also Human Ecologist, Marketing Manager, Public Relations Representative, Special Event Co-ordinator, Volunteer Manager
Funeral Attendant
see also Embalmer, Funeral Director
Funeral Director
see also Embalmer, Funeral Attendant
Furniture Mover
see also Shipper and Receiver, Station Attendant/Ramp Service Agent
Gambling Game Dealer
see Casino Dealer
Garbage Collector
see Refuse Collector
Garbage Truck Driver
see Refuse Truck Driver
Garden Equipment Technician
see Outdoor Power Equipment Technician
Gas Compressor Operator
see Gas Pipeline Operators and Maintenance Workers
Gas Field Production Operator
see Field Production Operator
Gas Pipeline Operators and Maintenance Workers
see also Field Production Operator, Gas Plant Operator, Gas Utility Operator, Oil Pipeline Operators and Maintenance Workers, Refinery/Upgrader Process Operator
Gas Plant Operator
see also Gas Pipeline Operators and Maintenance Workers, Power Engineer, Refinery/Upgrader Process Operator
Gas Utility Operator
see also Gas Pipeline Operators and Maintenance Workers, Gasfitter, Instrument Technician, Instrumentation Engineering Technologist, Materials Engineering Technologist, Steamfitter-Pipefitter
Gas Well Service Equipment Operator
see Well Service Equipment Operator
Gasfitter
see also Gas Utility Operator, Instrument Technician, Plumber, Recreation Vehicle Service Technician, Refrigeration and Air Conditioning Mechanic, Sprinkler Systems Installer, Steamfitter-Pipefitter
Gasoline Engine Technician
see Outdoor Power Equipment Technician
Gauger
see Oil Pipeline Operators and Maintenance Workers
Gemmologist
see also Geologist, Jeweller, Personal Property/Equipment Appraiser
General and Metal Building Systems Erector
see Ironworker
Genetic Engineer
see Biotechnologist
Geneticist
see also Agrologist, Biochemist, Biologist, Biotechnologist, Ecologist, Food Scientist, Microbiologist, Pharmacologist, Physician, Physiologist, Toxicologist
Geodetic Engineer
see Geomatics/Surveying Engineer
Geographer
see also Demographer, Geomatics/Surveying Engineer, Hydrologist, Interpretive Naturalist, Mapping Technologist
Geographic Information Systems (GIS) Engineer
see Geomatics/Surveying Engineer

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see points to the appropriate profile title ***see also*** suggests related profile title(s)

Geological and Geophysical Technologist
see also Exploration Geophysicist, Geologist, Hydrometric Technician/Technologist, Petroleum Engineering Technologist, Seismic Observer
Geological Oceanographer
see Oceanographer
Geologist
see also Exploration Geophysicist, Gemmologist, Geological and Geophysical Technologist, Hydrologist, Oceanographer, Petroleum Engineer
Geomatics/Mapping Technologist
see Mapping Technologist
Geomatics/Surveying Engineer
see also Civil Engineer, Environmental Engineer, Geographer, Geomatics/Surveying Technologist, Land Surveyor
Geomatics/Surveying Technologist
see also Architectural Technologist, Civil Engineering Technologist, Engineering Design and Drafting Technologist, Geomatics/Surveying Engineer, Land Surveyor, Mapping Technologist
Geophysical Technologist
see Geological and Geophysical Technologist
Geophysicist
see Exploration Geophysicist
Geriatric Health Aide
see Personal Care Attendant
Geriatric Medicine Specialist
see also Gerontological Specialist, Pathologist, Pediatrician, Physician, Psychiatrist
Gerontological Specialist
see also Community Health Nurse, Geriatric Medicine Specialist, Recreation Therapist, Social Worker
Glassworker
see Glazier
Glazier
see also Auto Body Technician, Carpenter, Floorcovering Installer, Insulator, Lather-Interior Systems Mechanic, Painter and Decorator, Roofer, Tilesetter
Goldsmith
see Jeweller
Golf Course Superintendent
see Turfgrass Management Specialist
Golf Professional
see also Fitness Instructor, Professional Athlete, Sports Instructor
Grader Operator
see Heavy Equipment Operator
Grain and Forage Crop Producer
see also Dairy Producer, Farm Worker/Technician, Livestock/Poultry Producer, Market Gardener, Seed Cleaning/Conditioning Plant Manager
Grain Inspector
see Agricultural Commodity Inspector
Grain Processing Machine Operator
see Agricultural Products Processing Machine Operator
Graphic Designer
see also Animator, Cartoonist, Illustrator, Industrial Designer, Interactive Media Developer, Pre-Press Technician, Web Designer
Greenhouse Operator
see also Landscape Architectural Technologist, Landscape Gardener, Market Gardener, Nursery Operator, Pest Control Operator
Greenskeeper
see Turfgrass Management Specialist
Groundwater Technician
see Hydrometric Technician/Technologist
Guest Services Attendant
see also Hotel and Motel Desk Clerk, Room/Housekeeping Attendant

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see points to the appropriate profile title ***see also*** suggests related profile title(s)

Guidance Counsellor
see Educational Counsellor
Gynecologist
see Physician
Hair Removal Technician
see Electrologist
Hairdresser
see Hairstylist
Hairstylist
see also Career and Technology Studies Teacher, Electrologist, Esthetician, Make-Up Artist, Nail Technician
Hardware Engineer
see Computer Engineer
Haute Couture Designer
see Fashion Designer
Hazardous Waste Auditor
see Environmental Auditor
Hazardous Waste Management Engineer
see Environmental Engineer
Hazardous Waste Management Technologist
see also Biochemist, Biological Technician, Biologist, Chemist, Environmental Auditor, Environmental Engineer, Hydrometric Technician/Technologist, Occupational Health and Safety Inspector, Pollution Control Technologist, Public Health Inspector, Water and Wastewater Treatment Plant Operator
Head Pro
see Golf Professional
Health Care Aide
see Personal Care Attendant
Health Information Management Professional
see also Administrative Assistant, Library Technician, Medical Secretary, Medical Transcriptionist, Receptionist, Unit Clerk, Word Processing Operator
Health Inspector
see Public Health Inspector
Health Officer
see Public Health Inspector
Health Record Technician
see Health Information Management Professional
Health Service Administrator
see also Accommodation Manager, Management Consultant, Municipal Administrator, School Business Official
Hearing Aid Practitioner
see also Audiologist, Ophthalmic Assistant, Optical Technician, Optician, Speech-Language Pathologist Assistant
Hearing Specialist
see Audiologist
Heart Health Technologist
see Cardiology Technologist
Heavy Duty Mechanic
see Heavy Equipment Technician
Heavy Equipment Mechanic (Off Road)
see Heavy Equipment Technician
Heavy Equipment Operator
see also Crane and Hoisting Equipment Operator, Logging/Forestry Equipment Operators, Surface Mining Equipment Operator, Underground Miner, Well Service Equipment Operator
Heavy Equipment Technician
see also Agricultural Equipment Technician, Automotive Service Technician, Railway Car Mechanic, Safety Officer, Welder
Helicopter Pilot
see also Airline Pilot, Canadian Forces Personnel - Commissioned Officer

Help Desk Support Analyst
see Customer Support Analyst
Hematopathologist
see Pathologist
Herbalist
see also Acupuncturist, Food Science Technologist, Homeopath, Massage Therapist, Midwife, Naturopathic Doctor, Reflexologist
Herdsman
see Farm Worker/Technician
Heritage Interpreter
see also Curator, Interpretive Naturalist, Museum Technician, Outdoor Sport/Recreation Guide, Tour Guide
High School Teacher
see Secondary School Teacher
Historian
see also Archivist, Curator, Political Scientist
Hockey Official
see Sports Official
Hockey Player
see Professional Athlete
Home Appliance Repairer
see Appliance Service Technician
Home Care Nurse
see Community Health Nurse
Home Economist
see also Career and Technology Studies Teacher, Career Development Professional, Child and Youth Care Worker, Costume Designer, Craftsperson, Fashion Designer, Food Scientist, Interior Decorator, Life Skills Coach, Market Research Analyst, Public Relations Representative, Special Event Co-ordinator, Volunteer Manager
Home Inspector
see also Carpenter, Electrician, Plumber, Safety Codes Officer
Home Support Aide/Home Health Aide
see Personal Care Attendant
Homeopath
see also Acupuncturist, Herbalist, Massage Therapist, Midwife, Naturopathic Doctor
Horseshoer
see Farrier
Hospital Administrator
see Health Service Administrator
Hotel and Motel Desk Clerk
see also Accommodation Manager, Guest Services Attendant, Receptionist
Hotel Housekeeper
see Executive Housekeeper
Hotel Manager
see Accommodation Manager
Housekeeping Attendant
see Room/Housekeeping Attendant
Human Cytogeneticist
see Geneticist
Human Ecologist
see also Aboriginal Liaison, Addictions Counsellor, Career and Technology Studies Teacher, Career Development Professional, Child and Youth Care Worker, Conservator, Costume Designer, Craftsperson, Fashion Designer, Fundraiser, Interior Decorator, Life Skills Coach, Market Research Analyst, Public Relations Representative, Purchasing Agent, Recreation Co-ordinator/Supervisor, Retail Store Manager, Special Event Co-ordinator, Volunteer Manager
Human Factors Specialist
see Ergonomist

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see points to the appropriate profile title ***see also*** suggests related profile title(s)

Human Resources Professional
see also Canadian Forces Personnel - Commissioned Officer, Career Development Professional, Industrial Engineer, Industrial Engineering Technologist, Management Consultant, Occupational Health and Safety Inspector, Retail Store Manager, School Business Official, Volunteer Manager

Hunting and Fishing Guide
see Outdoor Sport/Recreation Guide

Hydrocarbon Data Analyst
see Oil and Gas Well Loggers and Testers

Hydrologist
see also Biologist, Civil Engineer, Environmental Engineer, Exploration Geophysicist, Forester, Geographer, Geologist, Oceanographer

Hydrometric Technician/Technologist
see also Biological Technician, Biologist, Geological and Geophysical Technologist, Hazardous Waste Management Technologist, Petroleum Engineering Technologist, Pollution Control Technologist, Water and Wastewater Treatment Plant Operator

Illustrator
see also Animator, Cartoonist, Graphic Designer, Painter/Printmaker

Imam
see Religious Leader

Immigration Officer
see also Customs Inspector, Foreign Service Officer

Immunologist
see Microbiologist

Indoor Arena Operator
see Recreation Facility Operator

Industrial Arts Teacher
see Career and Technology Studies Teacher

Industrial Buyer
see Purchasing Agent

Industrial Designer
see also Architectural Technologist, Craftsperson, Engineering Design and Drafting Technologist, Ergonomist, Exhibit Designer, Graphic Designer, Manufacturing Engineer, Sculptor, Tool and Die Maker

Industrial Engineer
see also Ergonomist, Human Resources Professional, Industrial Engineering Technologist, Manufacturing Engineer, Operations Manager, Operations Research Analyst

Industrial Engineering Technologist
see also Chemical Engineering Technologist, Human Resources Professional, Industrial Engineer, Materials Engineering Technologist, Mechanical Engineering Technologist

Industrial Hygiene Auditor
see Environmental Auditor

Industrial Hygiene Engineer
see Environmental Engineer

Industrial Hygienist
see Occupational Hygienist

Industrial Instrumentation Technologist
see Instrumentation Engineering Technologist

Industrial Mechanic
see Heavy Equipment Technician

Industrial Nurse
see Occupational Health Nurse

Industrial Plant Cleaner
see Custodian

Industrial Psychologist
see Psychologist

Infantryman
see Canadian Forces Personnel - Non Commissioned

Informatics Consultant
see Information Systems Consultant
Information Officer
see Public Relations Representative
Information Professional
see Librarian
Information Systems Consultant
see also Computer Programmer, Data Administrator, Information Systems Quality Assurance Analyst, Management Consultant, Systems Auditor, Systems Security Analyst
Information Systems Quality Assurance Analyst
see also Computer Programmer, Database Analyst, Information Systems Consultant, Interactive Media Developer, Software Engineer, Systems Auditor, Systems Security Analyst, Systems Tester, Web Designer, Webmaster
Inorganic Chemist
see Chemist
Insect Biologist
see Entomologist
Institutional Aide
see Psychiatric Aide
Instructional Assistant
see Educational Assistant
Instrument Repairer
see Musical Instrument Repair Technician
Instrument Technician
see also Chemical Engineer, Gas Utility Operator, Gasfitter, Instrumentation Engineering Technologist, Plumber, Refrigeration and Air Conditioning Mechanic, Sprinkler Systems Installer, Steamfitter-Pipefitter
Instrumental Musician
see also Composer, Music Copyist, Orchestra/Band Conductor, Orchestrator/Arranger, Singer
Instrumentation Engineer
see Electrical Engineer
Instrumentation Engineering Technologist
see also Chemical Engineer, Gas Utility Operator, Instrument Technician, Technical Sales Representative, Telecommunications Engineering Technologist
Insulator
see also Floorcovering Installer, Glazier, Lather-Interior Systems Mechanic, Painter and Decorator, Roofer
Insurance Actuary
see Actuary
Insurance Adjuster
see also Customs Broker, Insurance Agent/Broker, Insurance Underwriter, Personal Property/Equipment Appraiser, Private Investigator
Insurance Agent/Broker
see also Banking/Investment Manager, Financial Planner, Insurance Adjuster, Insurance Underwriter, Investment Advisor, Mortgage Agent, Real Estate Agent
Insurance Underwriter
see also Actuary, Customs Broker, Insurance Adjuster, Insurance Agent/Broker
Interactive Media Developer
see also Animator, Computer and Network Operator, Computer Programmer, Database Analyst, Graphic Designer, Information Systems Quality Assurance Analyst, Software Engineer, Systems Tester, Web Designer, Web Technician
Interior Decorator
see also Floral Designer, Home Economist, Human Ecologist, Interior Designer, Retail Salesperson, Visual Merchandiser
Interior Designer
see also Architect, Architectural Technologist, Interior Decorator
Interior Systems Mechanic
see Lather-Interior Systems Mechanic

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see points to the appropriate profile title ***see also*** suggests related profile title(s)

Internal Auditor
see also Accountant, Accounting Technician, School Business Official, Systems Auditor
Internet Site Designer
see Web Designer
Internet Site Manager
see Webmaster
Internet Site Technician
see Web Technician
Interpreter
see also English as a Second Language Teacher - Adults, Foreign Service Officer, Linguist, Sign Language Interpreter, Translator
Interpretive Naturalist
see also Biologist, Ecologist, Entomologist, Environmental Education Specialist, Geographer, Heritage Interpreter, Outdoor Sport/Recreation Guide, Park Warden
Invertebrate Biologist
see Entomologist
Investment Advisor
see also Banking/Investment Manager, Financial Analyst, Financial Planner, Insurance Agent/Broker, Investment Underwriter
Investment Analyst
see Financial Analyst
Investment Banker
see Investment Underwriter
Investment Manager
see Banking/Investment Manager
Investment Underwriter
see also Financial Analyst, Investment Advisor
Ironworker
see also Boilermaker, Structural Steel and Plate Fitter, Welder
Jailer
see Correctional Officer
Janitor
see Custodian
Jeweller
see also Craftsperson, Gemmologist, Personal Property/Equipment Appraiser, Watch Repairer
Journalist
see Reporter
Judge
see also Arbitrator, Lawyer
Judicial Clerk
see also Land Titles Examiner, Legal and Realtime Reporter, Paralegal
Junior High School Teacher
see Secondary School Teacher
Justice
see Judge
Kennel Attendant
see Animal Care Attendant
Key Duplicator
see Locksmith
Kinesiologist
see also Athletic Therapist, Coach, Ergonomist, Massage Therapist, Physiotherapist, Recreation Co-ordinator/Supervisor, Recreation Therapist, Sport Medicine Physician
Kitchen Helper and Food Assembler
see also Food and Beverage Server, Food Service Helper
Kraft Mill Operator
see Pulpmill Operator
Laboratory and X-Ray Technologist
see Combined Laboratory and X-Ray Technologist

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see points to the appropriate profile title ***see also*** suggests related profile title(s)

Laboratory Physician
see Pathologist
Labour Dispute Arbitrator
see Arbitrator
Labour Relations Officer
see Human Resources Professional
Land Agent
see also Land Titles Examiner, Mediator, Real Estate Agent, Real Estate Appraiser
Land Assessor
see Assessor
Land Surveyor
see also Geomatics/Surveying Engineer, Geomatics/Surveying Technologist, Mapping Technologist, Urban, Regional and Park Planners
Land Titles Examiner
see also Judicial Clerk, Land Agent, Paralegal
Land Use Planner
see Urban, Regional and Park Planners
Landscape Architect
see also Architect, Environmental Engineer, Landscape Architectural Technologist, Urban, Regional and Park Planners
Landscape Architectural Technologist
see also Arborist, Architectural Technologist, Greenhouse Operator, Landscape Architect, Landscape Gardener, Nursery Operator, Turfgrass Management Specialist
Landscape Gardener
see also Arborist, Greenhouse Operator, Landscape Architectural Technologist, Market Gardener, Nursery Operator, Turfgrass Management Specialist
Language Interpreter
see Interpreter
Lather-Interior Systems Mechanic
see also Bricklayer, Concrete Finisher, Floorcovering Installer, Glazier, Insulator, Painter and Decorator, Plasterer, Tilesetter
Laundry Workers
see Dry Cleaning and Laundry Workers
Lawn and Garden Equipment Technician
see Outdoor Power Equipment Technician
Lawyer
see also Arbitrator, Canadian Forces Personnel - Commissioned Officer, Judge, Mediator, Paralegal, Political Scientist
Leasehand
see Drilling Rig Leasehand/Floorhand
Leather Worker
see Craftsperson
Lecturer
see University Professor
Legal and Realtime Reporter
see also Judicial Clerk, Legal Secretary, Medical Transcriptionist, Paralegal, Word Processing Operator
Legal Arbitrator
see Arbitrator
Legal Secretary
see also Administrative Assistant, Legal and Realtime Reporter, Paralegal, Word Processing Operator
Letter Carrier
see also Mail Sorter, Messenger/Courier, Postal/Wicket Clerk
Librarian
see also Archivist, Library Technician, Webmaster
Library Clerk
see also Library Technician

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see points to the appropriate profile title ***see also*** suggests related profile title(s)

Library Technician
see also Health Information Management Professional, Librarian, Library Clerk, Paralegal, Webmaster

Librettist
see Songwriter

Licensed Practical Nurse
see also Community Health Nurse, Licensed Practical Nurse (Advanced Orthopaedic Specialty), Midwife, Personal Care Attendant, Psychiatric Nurse, Registered Nurse, Sterile Processing Technician

Licensed Practical Nurse (Advanced Orthopaedic Specialty)
see also Licensed Practical Nurse

Life Insurance Agent
see Insurance Agent/Broker

Life Insurance Underwriter
see Insurance Underwriter

Life Skills Coach
see also Addictions Counsellor, Career Development Professional, Child and Youth Care Worker, Community Health Representative, Correctional Services Worker, Family/Marriage Counsellor, Home Economist, Human Ecologist, Mental Health Worker

Light Duty Cleaner
see Room/Housekeeping Attendant

Lighting Designer
see also Cinematographer, Costume Designer, Craftsperson, Lighting Technician, Set Designer

Lighting Technician
see also Electrician, Lighting Designer, Recording/Sound Engineer, Stage Manager

Lineman
see Power Lineman

Linesman
see Sports Official

Linguist
see also Anthropologist, Audiologist, Interpreter, Speech-Language Pathologist, Translator

Linguistic Anthropologist
see Anthropologist

Literary Critic
see Critic

Livestock Carcass Grader
see Agricultural Commodity Inspector

Livestock Specialist
see Agrologist

Livestock/Poultry Producer
see also Dairy Producer, Farm Worker/Technician, Grain and Forage Crop Producer, Market Gardener, Swine Technician

Living Unit Officer
see Correctional Services Worker

Loans Manager
see Credit/Loans Manager

Locksmith
see also Security Alarm Installer

Log Loader Operator
see Logging/Forestry Equipment Operators

Log Processing Machine Operator
see Sawmill Machine Operator

Log Sawfiler
see Sawfiler

Logging/Forestry Equipment Operators
see also Forest Technician, Heavy Equipment Operator

Loss Prevention Officer
see Security Guard

LRT Operator
see Bus Driver
Lumbermill Machine Operator
see Sawmill Machine Operator
Lyricist
see Songwriter
Machinist
see also Millwright, Sawfiler, Tool and Die Maker, Welder
Magazine Editor
see Editor
Magazine Reporter
see Reporter
Magnetic Imaging Technologist
see Magnetic Resonance Technologist
Magnetic Resonance Technologist
see also Diagnostic Medical Sonographer, Electroneurophysiology (ENP) Technologist, Nuclear Medicine Technologist, Radiation Therapist, Radiological Technologist
Mail Carrier
see Letter Carrier
Mail Sorter
see also Canadian Forces Personnel - Non Commissioned , Letter Carrier, Postal/Wicket Clerk, Shipper and Receiver, Warehousing Professionals
Maitre D'hotel
see Food and Beverage Service Supervisor In Formal Dining Rooms
Make-Up Artist
see also Cosmetician, Esthetician, Hairstylist, Painter/Printmaker
Management Consultant
see also Advertising Account Executive, Banking/Investment Manager, Data Administrator, Economist, Health Service Administrator, Human Resources Professional, Information Systems Consultant, Market Research Analyst, Marketing Manager, Operations Manager, Operations Research Analyst, Recreation and Sport Administrator, School Business Official
Management Information Systems Consultant
see Information Systems Consultant
Management Scientist
see Operations Research Analyst
Managing Editor
see Editor
Manicurist and Pedicurist
see Nail Technician
Manufacturer's Sales Representative
see Technical Sales Representative
Manufacturing Engineer
see also Ergonomist, Industrial Designer, Industrial Engineer, Operations Manager, Operations Research Analyst
Manufacturing Engineering Technologist
see Automated Systems Technologist
Mapping Technologist
see also Civil Engineering Technologist, Engineering Design and Drafting Technologist, Geographer, Geomatics/Surveying Technologist, Land Surveyor
Marine Biologist
see Biologist
Marker
see Dry Cleaning and Laundry Workers
Market Gardener
see also Beekeeper, Dairy Producer, Grain and Forage Crop Producer, Greenhouse Operator, Landscape Gardener, Livestock/Poultry Producer, Nursery Operator
Market Research Analyst
see also Advertising Account Executive, Home Economist, Human Ecologist, Management Consultant, Marketing Manager

Marketing Manager
see also Advertising Account Executive, Fundraiser, Management Consultant, Market Research Analyst, Public Relations Representative, Retail Store Manager, Webmaster
Marriage Counsellor
see Family/Marriage Counsellor
Massage Therapist
see also Acupuncturist, Athletic Therapist, Herbalist, Homeopath, Kinesiologist, Midwife, Naturopathic Doctor, Physiotherapist, Reflexologist
Masseur
see Massage Therapist
Master Control Operator
see Television Audio/Video Operator
Materials Engineering Technologist
see also Commercial Diver, Gas Utility Operator, Industrial Engineering Technologist, Materials/Metallurgical Engineer, Mechanical Engineering Technologist, Plastics Processing Technician
Materials/Metallurgical Engineer
see also Materials Engineering Technologist, Mining Engineer, Petroleum Engineer
Mathematician
see also Actuary, Astronomer, Demographer, Economist, Operations Research Analyst, Statistician
Meat Cutter
see also Agricultural Products Processing Machine Operator, Cook
Meat Inspector
see Agricultural Commodity Inspector
Meat Processing Machine Operator
see Agricultural Products Processing Machine Operator
Mechanical Engineer
see also Aerospace Engineer, Agricultural Engineer, Forensic Laboratory Analyst, Mechanical Engineering Technologist, Technical Sales Representative
Mechanical Engineering Technologist
see also Automated Systems Technologist, Biomedical Engineering Technologist, Engineering Design and Drafting Technologist, Industrial Engineering Technologist, Materials Engineering Technologist, Mechanical Engineer, Plastics Processing Technician, Transport Refrigeration Technician
Mediator
see also Aboriginal Liaison, Arbitrator, Family/Marriage Counsellor, Foreign Service Officer, Land Agent, Lawyer, Private Trainer/Facilitator, Psychologist, Social Worker
Medical Anthropologist
see Anthropologist
Medical Doctor
see Physician
Medical Geneticist
see Geneticist
Medical Illustrator
see Illustrator
Medical Laboratory and X-Ray Technologist
see Combined Laboratory and X-Ray Technologist
Medical Laboratory Technologist
see also Biological Technician, Canadian Forces Personnel - Non Commissioned , Combined Laboratory and X-Ray Technologist
Medical Office Receptionist
see Receptionist
Medical Radiation Technologist
see Radiological Technologist
Medical Secretary
see also Administrative Assistant, Health Information Management Professional, Medical Transcriptionist, Unit Clerk

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see points to the appropriate profile title ***see also*** suggests related profile title(s)

Medical Sonographer
see Diagnostic Medical Sonographer
Medical Transcriptionist
see also Health Information Management Professional, Legal and Realtime Reporter, Medical Secretary, Unit Clerk, Word Processing Operator
Meeting Planner
see Special Event Co-ordinator
Mental Health Aide
see Psychiatric Aide
Mental Health Worker
see also Aboriginal Liaison, Addictions Counsellor, Child and Youth Care Worker, Community Health Representative, Expressive Arts Therapists, Family/Marriage Counsellor, Life Skills Coach, Psychiatric Nurse, Psychologist, Registered Nurse, Rehabilitation Practitioner, Social Worker
Merchandise Presentation Specialist
see Visual Merchandiser
Messenger/Courier
see also Letter Carrier, Truck Driver, Vending Machine Route Worker
Metal Building Systems Erector
see Ironworker
Metallurgical Engineer
see Materials/Metallurgical Engineer
Meteorologist
see also Canadian Forces Personnel - Commissioned Officer, Oceanographer
Microbiologist
see also Agrologist, Biochemist, Biologist, Biotechnologist, Ecologist, Entomologist, Food Scientist, Forensic Laboratory Analyst, Geneticist, Pathologist, Pharmacologist, Physiologist, Toxicologist
Midwife
see also Acupuncturist, Herbalist, Homeopath, Licensed Practical Nurse, Massage Therapist, Naturopathic Doctor, Registered Nurse
Military Non Commissioned Personnel
see Canadian Forces Personnel - Non Commissioned
Military Officer
see Canadian Forces Personnel - Commissioned Officer
Military Police
see Canadian Forces Personnel - Non Commissioned
Milk Processing Machine Operator
see Agricultural Products Processing Machine Operator
Milk Producer
see Dairy Producer
Millwright
see also Mac. . st, Plastics Processing Technician, Tool and Die Maker, Welder
Mine Geologist
see Exploration Geophysicist
Mining Engineer
see also Materials/Metallurgical Engineer, Petroleum Engineer
Mix Engineer
see Recording/Sound Engineer
Mobile Crane Operator
see Crane and Hoisting Equipment Operator
Model
see also Actor, Announcer
Mortgage Agent
see also Banking/Investment Manager, Credit/Loans Manager, Insurance Agent/Broker, Real Estate Agent
Motel Desk Clerk
see Hotel and Motel Desk Clerk

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see points to the appropriate profile title ***see also*** suggests related profile title(s)

Motel Manager
see Accommodation Manager
Motion Picture Camera Operator
see Cinematographer
Motion Picture Director
see Film Director
Motion Picture Producer
see Producer - Film, Radio, Television and Theatre
Motor Coach Driver
see Bus Driver
Motorcycle Mechanic
see also Appliance Service Technician, Electrical Motor Systems Technician, Outdoor Power Equipment Technician
Motorhome Mechanic
see Recreation Vehicle Service Technician
Mountain Guide
see Outdoor Sport/Recreation Guide
Mover
see Furniture Mover
Multimedia Developer
see Interactive Media Developer
Municipal Administrator
see also Health Service Administrator, School Business Official
Municipal Recycling Truck Driver
see also Municipal Recycling Waste Handler, Refuse Truck Driver, Truck Driver
Municipal Recycling Waste Handler
see also Municipal Recycling Truck Driver, Refuse Collector
Museum Curator
see Curator
Museum Display Artist
see Exhibit Designer
Museum Interpreter
see Heritage Interpreter
Museum Technician
see also Anthropologist, Archaeologist, Curator, Exhibit Designer, Heritage Interpreter
Music Arranger
see Orchestrator/Arranger
Music Composer
see Composer
Music Copyist
see also Choral Conductor, Composer, Instrumental Musician, Orchestra/Band Conductor, Orchestrator/Arranger, Songwriter
Music Critic
see Critic
Music Recording Engineer
see Recording/Sound Engineer
Music Therapist
see Expressive Arts Therapists
Musical Instrument Repair Technician
see also Craftsperson
Musician
see Instrumental Musician
Mycologist
see Microbiologist
Nail Technician
see also Cosmetician, Electrologist, Esthetician, Hairstylist
Nanny
see also Domestic Housekeeper, Early Childhood Educator, Personal Care Attendant

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see points to the appropriate profile title ***see also*** suggests related profile title(s)

Natural Gas Utility Operator
see Gas Utility Operator
Natural Interpreter
see Interpretive Naturalist
Naturalist
see Interpretive Naturalist
Naturopath
see Naturopathic Doctor
Naturopathic Doctor
see also Acupuncturist, Chiropractor, Herbalist, Homeopath, Massage Therapist, Midwife, Optometrist, Physician, Podiatrist, Reflexologist, Sport Medicine Physician
Naval Weapons Technician
see Canadian Forces Personnel - Non Commissioned
Negotiator
see Mediator
Network Administrator
see Computer and Network Operator
Neurologist
see Physician
Neuropathologist
see Pathologist
News Editor
see Editor
Newspaper Reporter
see Reporter
Nondestructive Testing Engineer
see Materials/Metallurgical Engineer
Nondestructive Testing Engineering Technologist
see Materials Engineering Technologist
Novelist
see Creative Writer
Nuclear Medicine Technologist
see also Diagnostic Medical Sonographer, Magnetic Resonance Technologist, Radiation Therapist, Radiological Technologist
Nurse Practitioner
see also Community Health Nurse, Physician, Registered Nurse
Nursery Operator
see also Arborist, Greenhouse Operator, Landscape Architectural Technologist, Landscape Gardener, Market Gardener, Pest Control Operator
Nursing Assistant
see Licensed Practical Nurse
Nutritionist
see Dietitian
Obstetrician
see Physician
Occupational Hazards Specialist
see Ergonomist
Occupational Health and Safety Inspector
see also Environmental Auditor, Environmental Engineer, Hazardous Waste Management Technologist, Human Resources Professional, Occupational Hygienist, Public Health Inspector, Safety Codes Officer, Safety Officer
Occupational Health Nurse
see also Community Health Nurse, Psychiatric Nurse, Registered Nurse, Respiratory Therapist
Occupational Hygienist
see also Environmental Auditor, Ergonomist, Occupational Health and Safety Inspector, Safety Officer
Occupational Therapist
see also Career Development Professional, Expressive Arts Therapists, Occupational Therapist Assistant, Physiotherapist, Recreation Therapist

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see points to the appropriate profile title ***see also*** suggests related profile title(s)

Occupational Therapist Assistant
see also Chiropractic Assistant, Educational Assistant, Occupational Therapist, Ophthalmic Assistant, Physical Therapy Assistant, Recreation Co-ordinator/Supervisor, Rehabilitation Practitioner, Speech-Language Pathologist Assistant

Oceanographer
see also Exploration Geophysicist, Geologist, Hydrologist, Meteorologist

Office Assistant
see Administrative Assistant

Office Equipment Technician
see also Appliance Service Technician, Computer Service Technician, Electronic Technician, Vending Machine Repairer

Office Receptionist
see Receptionist

Oil and Gas Company Land Agent
see Land Agent

Oil and Gas Engineer
see Petroleum Engineer

Oil and Gas Well Drilling and Service Rig Managers
see Drilling and Service Rig Managers

Oil and Gas Well Drilling Operators
see Rig Technician

Oil and Gas Well Drilling Rig Leasehand/Floorhand
see Drilling Rig Leasehand/Floorhand

Oil and Gas Well Loggers and Testers
see also Drilling and Service Rig Managers, Drilling Rig Leasehand/Floorhand, Rig Technician, Service Rig Personnel, Well Service Equipment Operator, Wireline Field Supervisor

Oil and Gas Well Service Rig Personnel
see Service Rig Personnel

Oil Field Production Operator
see Field Production Operator

Oil Pipeline Operators and Maintenance Workers
see also Field Production Operator, Gas Pipeline Operators and Maintenance Workers, Refinery/Upgrader Process Operator

Oil Refinery Process Operator
see Refinery/Upgrader Process Operator

Oil Well Service Equipment Operator
see Well Service Equipment Operator

Oncologist
see Physician

Online Producer
see Reporter

Open Pit Mining Equipment Operator
see Surface Mining Equipment Operator

Operations Clerk
see Utility Clerk

Operations Engineering Technologist
see Chemical Engineering Technologist

Operations Management/Research Technologist
see Industrial Engineering Technologist

Operations Manager
see also Industrial Engineer, Management Consultant, Manufacturing Engineer, Operations Research Analyst, Traffic Manager

Operations Research Analyst
see also Actuary, Demographer, Financial Analyst, Industrial Engineer, Management Consultant, Manufacturing Engineer, Mathematician, Operations Manager, Statistician

Ophthalmic Assistant
see also Dental Assistant, Hearing Aid Practitioner, Occupational Therapist Assistant, Optical Technician, Optician, Optometrist, Pharmacy Assistant/Technician, Physical Therapy Assistant, Speech-Language Pathologist Assistant

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see points to the appropriate profile title ***see also*** suggests related profile title(s)

Ophthalmic Dispenser
see Optician

Optical Technician
see also Electronics Assemblers and Fabricators, Hearing Aid Practitioner, Ophthalmic Assistant, Optician, Optometrist

Optician
see also Hearing Aid Practitioner, Ophthalmic Assistant, Optical Technician, Optometrist, Retail Salesperson

Optometrist
see also Chiropractor, Dentist, Naturopathic Doctor, Ophthalmic Assistant, Optical Technician, Optician, Physician, Podiatrist

Orchestra/Band Conductor
see also Choral Conductor, Composer, Instrumental Musician, Music Copyist, Orchestrator/Arranger, Songwriter

Orchestrator/Arranger
see also Choral Conductor, Composer, Instrumental Musician, Music Copyist, Orchestra/Band Conductor, Songwriter

Organic Chemist
see Chemist

Organizational Psychologist
see Psychologist

Orthopaedic Technician
see Licensed Practical Nurse (Advanced Orthopaedic Specialty)

Orthotic Technician
see Prosthetic/Orthotic Technician

Orthotist
see Prosthetist and Orthotist

Outdoor Power Equipment Technician
see also Appliance Service Technician, Electrical Motor Systems Technician, Motorcycle Mechanic

Outdoor Recreation Facility Operator
see Recreation Facility Operator

Outdoor Sport/Recreation Guide
see also Environmental Education Specialist, Heritage Interpreter, Interpretive Naturalist, Tour Guide, Travel Guide

Painter and Decorator
see also Floorcovering Installer, Glazier, Insulator, Lather-Interior Systems Mechanic, Roofer

Painter/Printmaker
see also Conservator, Craftsperson, Illustrator, Make-Up Artist, Printing Press Operator, Sculptor, Set Designer

Paralegal
see also Judicial Clerk, Land Titles Examiner, Lawyer, Legal and Realtime Reporter, Legal Secretary, Library Technician, Word Processing Operator

Paramedic
see Emergency Medical Technologist - Paramedic

Parasitologist
see Microbiologist

Park Planner
see Urban, Regional and Park Planners

Park Ranger
see Conservation Officer

Park Warden
see also Biologist, Bylaw Enforcement Officer, Conservation Officer, Interpretive Naturalist, Police Officer

Parole/Probation Officer
see also Addictions Counsellor, Child and Youth Care Worker, Correctional Services Worker, Social Worker

Parts Picker
see Warehousing Professionals

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see points to the appropriate profile title ***see also*** suggests related profile title(s)

Parts Technician
see also Shipper and Receiver, Warehousing Professionals
Passenger Agent
see Airline Ticket Agent
Pastor
see Religious Leader
Pathologist
see also Biochemist, Forensic Laboratory Analyst, Geriatric Medicine Specialist, Microbiologist, Pediatrician, Physician, Psychiatrist
Paver Operator
see Heavy Equipment Operator
Pediatrician
see also Geriatric Medicine Specialist, Pathologist, Physician, Psychiatrist, Sport Medicine Physician
Personal Care Attendant
see also Domestic Housekeeper, Licensed Practical Nurse, Nanny, Psychiatric Aide, Rehabilitation Practitioner
Personal Computer Service Technician
see Computer Service Technician
Personal Financial Services Officer
see Credit/Loans Manager
Personal Fitness Trainer
see Fitness Instructor
Personal Property/Equipment Appraiser
see also Assessor, Customs Broker, Gemmologist, Insurance Adjuster, Jeweller, Real Estate Appraiser
Personnel Officer/Administrator
see Human Resources Professional
Pest Control Operator
see also Greenhouse Operator, Nursery Operator
Pet Groomer
see also Animal Care Attendant, Animal Health Technologist
Pet Shop Attendant
see Animal Care Attendant
Petroleum Engineer
see also Chemical Engineer, Geologist, Materials/Metallurgical Engineer, Mining Engineer, Petroleum Engineering Technologist
Petroleum Engineering Technologist
see also Chemical Engineering Technologist, Geological and Geophysical Technologist, Hydrometric Technician/Technologist, Petroleum Engineer, Seismic Observer
Petroleum Exploration Geophysicist
see Exploration Geophysicist
Petroleum Geologist
see Geologist
Petroleum Land Agent
see Land Agent
Pharmacist
see also Canadian Forces Personnel - Commissioned Officer, Pharmacologist
Pharmacologist
see also Agrologist, Biologist, Biotechnologist, Chemist, Ecologist, Food Scientist, Forensic Laboratory Analyst, Geneticist, Microbiologist, Pharmacist, Physician, Physiologist, Toxicologist
Pharmacy Assistant/Technician
see also Ophthalmic Assistant, Sterile Processing Technician
Photocopier Operator
see Digital Printing Machine Operator
Photogrammetric and Remote Sensing Engineer
see Geomatics/Surveying Engineer

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see points to the appropriate profile title ***see also*** suggests related profile title(s)

Photogrammetric Technologist
see Mapping Technologist
Photographer
see also Cinematographer, Reporter, Television Camera Operator
Photographic Processing Technician
see also Plastics Processing Technician
Physical Anthropologist
see Anthropologist
Physical Chemist
see Chemist
Physical Education Teacher
see Secondary School Teacher
Physical Oceanographer
see Oceanographer
Physical Therapist
see Physiotherapist
Physical Therapy Assistant
see also Chiropractic Assistant, Dental Assistant, Occupational Therapist Assistant, Ophthalmic Assistant, Physiotherapist, Rehabilitation Practitioner, Speech-Language Pathologist Assistant
Physician
see also Canadian Forces Personnel - Commissioned Officer, Chiropractor, Dentist, Geneticist, Geriatric Medicine Specialist, Naturopathic Doctor, Nurse Practitioner, Optometrist, Pathologist, Pediatrician, Pharmacologist, Physiologist, Podiatrist, Psychiatrist, Sport Medicine Physician
Physicist
see also Astronomer, Exploration Geophysicist, Forensic Laboratory Analyst
Physiologist
see also Biochemist, Biologist, Biotechnologist, Ecologist, Food Scientist, Geneticist, Microbiologist, Pharmacologist, Physician, Toxicologist
Physiotherapist
see also Canadian Forces Personnel - Commissioned Officer, Ergonomist, Kinesiologist, Massage Therapist, Occupational Therapist, Physical Therapy Assistant, Recreation Therapist, Sport Medicine Physician
Physiotherapy Assistant
see Physical Therapy Assistant
Piano Technician
see Musical Instrument Repair Technician
Pipe Organ Repairer
see Musical Instrument Repair Technician
Planermill Machine Operator
see Sawmill Machine Operator
Planermill Maintenance Technician
see Sawfiler
Planetary Geologist
see Geologist
Plasma Physicist
see Physicist
Plasterer
see also Bricklayer, Concrete Finisher, Lather-Interior Systems Mechanic, Tilesetter
Plastics Processing Technician
see also Materials Engineering Technologist, Mechanical Engineering Technologist, Millwright, Photographic Processing Technician, Tool and Die Maker
Play School Teacher
see Early Childhood Educator
Playwright
see Creative Writer

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see points to the appropriate profile title ***see also*** suggests related profile title(s)

Plumber
see also Construction Craft Labourer, Gasfitter, Home Inspector, Instrument Technician, Refrigeration and Air Conditioning Mechanic, Safety Codes Officer, Safety Officer, Sprinkler Systems Installer, Steamfitter-Pipefitter
Plumbing and Gas Inspector
see Safety Codes Officer
Podiatrist
see also Chiropractor, Naturopathic Doctor, Optometrist, Physician, Reflexologist
Poet
see Creative Writer
Police Officer
see also Bylaw Enforcement Officer, Canadian Forces Personnel - Non Commissioned , Conservation Officer, Correctional Officer, Emergency Medical Responder, Emergency Medical Technician - Ambulance, Emergency Medical Technologist - Paramedic, Fish and Wildlife Officer, Park Warden, Private Investigator, Security Guard
Political Scientist
see also Foreign Service Officer, Historian, Lawyer, Sociologist
Pollution Control Technologist
see also Biological Technician, Biologist, Chemical Engineering Technologist, Chemical Technologist, Environmental Engineer, Hazardous Waste Management Technologist, Hydrometric Technician/Technologist
Polymer Chemist
see Chemist
Population Geneticist
see Geneticist
Population Specialist
see Demographer
Pork Producer
see Livestock/Poultry Producer
Pork Specialist
see Agrologist
Portable Chipper Operator
see Logging/Forestry Equipment Operators
Portrait Photographer
see Photographer
Postal/Wicket Clerk
see also Letter Carrier, Mail Sorter, Retail Salesperson
Potter
see Craftsperson
Poultry Inspector
see Agricultural Commodity Inspector
Poultry Producer
see Livestock/Poultry Producer
Power Engineer
see also Building Operator, Gas Plant Operator, Safety Codes Officer
Power Lineman
see also Communication Technician, Crane and Hoisting Equipment Operator, Electrician, Power System Electrician
Power Shovel Operator
see Heavy Equipment Operator
Power System Electrician
see also Canadian Forces Personnel - Non Commissioned , Communication Technician, Electrical Motor Systems Technician, Electrician, Power Lineman, Safety Officer
Practical Nurse
see Licensed Practical Nurse
Preacher
see Religious Leader

Pre-Press Technician
see also Binding and Finishing Machine Operators, Digital Printing Machine Operator, Graphic Designer, Printing Press Operator, Word Processing Operator

Pressure Tester
see Oil and Gas Well Loggers and Testers

Pressure Vessel Designer
see Engineering Design and Drafting Technologist

Pressure Vessel Fabricator
see Boilermaker

Priest
see Religious Leader

Printing Press Operator
see also Binding and Finishing Machine Operators, Digital Printing Machine Operator, Painter/Printmaker, Pre-Press Technician

Printmaker
see Painter/Printmaker

Prison Guard
see Correctional Officer

Private Investigator
see also Bylaw Enforcement Officer, Canadian Forces Personnel - Non Commissioned , Correctional Officer, Forensic Laboratory Analyst, Insurance Adjuster, Police Officer, Security Guard

Private Trainer/Facilitator
see also Career and Technology Studies Teacher, Career Development Professional, College, Technical or Vocational Instructor, Driving Instructor, English as a Second Language Teacher - Adults, Environmental Education Specialist, Mediator, Secondary School Teacher

Probation Officer
see Parole/Probation Officer

Process Engineering Technologist
see Chemical Engineering Technologist

Producer - Film, Radio, Television and Theatre
see also Choreographer, Cinematographer, Film Director, Public Relations Representative, Stage Manager, Theatre Director

Product Demonstrator
see Direct Distributor

Product/Brand Manager
see Marketing Manager

Production Control Technologist
see Industrial Engineering Technologist

Production Field Operator
see Field Production Operator

Production Supervisor
see Farm Worker/Technician

Professional Accountant
see Accountant

Professional Athlete
see also Coach, Fitness Instructor, Golf Professional, Sports Official

Professional Coach
see Coach

Professional Dancer
see Dancer

Professor
see University Professor

Program Aide/Assistant
see Educational Assistant

Programmer Analyst
see Computer Programmer

Property Appraiser
see Real Estate Appraiser

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see points to the appropriate profile title ***see also*** suggests related profile title(s)

Property Assessor
see Assessor
Property Insurance Agent
see Insurance Agent/Broker
Property Insurance Underwriter
see Insurance Underwriter
Property Manager
see also Building Operator, Building Superintendent
Prosthetic/Orthotic Technician
see also Denturist, Prosthetist and Orthotist
Prosthetist and Orthotist
see also Dental Technologist, Prosthetic/Orthotic Technician
Pruner
see Arborist
Psychiatric Aide
see also Personal Care Attendant
Psychiatric Nurse
see also Community Health Nurse, Licensed Practical Nurse, Mental Health Worker, Occupational Health Nurse, Registered Nurse, Social Worker
Psychiatrist
see also Geriatric Medicine Specialist, Pathologist, Pediatrician, Physician, Psychologist
Psychologist
see also Addictions Counsellor, Career Development Professional, Child and Youth Care Worker, Expressive Arts Therapists, Family/Marriage Counsellor, Mediator, Mental Health Worker, Psychiatrist, Social Worker, Special Needs Teacher
Public Affairs Officer
see Public Relations Representative
Public Health Inspector
see also Community Health Nurse, Environmental Auditor, Food Scientist, Hazardous Waste Management Technologist, Occupational Health and Safety Inspector
Public Health Nurse
see Community Health Nurse
Public Relations Representative
see also Aboriginal Liaison, Advertising Account Executive, Canadian Forces Personnel - Commissioned Officer, Creative Writer, Fundraiser, Home Economist, Human Ecologist, Marketing Manager, Producer - Film, Radio, Television and Theatre, School Business Official, Volunteer Manager, Webmaster
Pulpmill Operator
see also Refinery/Upgrader Process Operator, Sawmill Machine Operator
Purchasing Agent
see also Customs Broker, Human Ecologist, School Business Official
Rabbi
see Religious Leader
Radiation Therapist
see also Diagnostic Medical Sonographer, Magnetic Resonance Technologist, Nuclear Medicine Technologist, Radiological Technologist, Respiratory Therapist
Radio Announcer
see Announcer
Radio Producer
see Producer - Film, Radio, Television and Theatre
Radio Repairer
see Electronic Technician
Radio Reporter
see Reporter
Radio Sound Engineer
see Recording/Sound Engineer
Radio Traffic Co-ordinator
see Traffic Co-ordinator

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see points to the appropriate profile title ***see also*** suggests related profile title(s)

Radiological Technologist
see also Canadian Forces Personnel - Non Commissioned , Combined Laboratory and X-Ray Technologist, Dental Assistant, Diagnostic Medical Sonographer, Magnetic Resonance Technologist, Nuclear Medicine Technologist, Radiation Therapist

Radiologist
see Physician

Railway Car Mechanic
see also Heavy Equipment Technician, Transport Refrigeration Technician

Ramp Service Attendant
see Station Attendant/Ramp Service Agent

Ranch Worker
see Farm Worker/Technician

Rancher
see Livestock/Poultry Producer

Ranger
see Conservation Officer

Rapid Data Entry Operator
see Legal and Realtime Reporter

Real Estate Agent
see also Insurance Agent/Broker, Land Agent, Mortgage Agent, Real Estate Appraiser, Retail Salesperson

Real Estate Appraiser
see also Assessor, Land Agent, Personal Property/Equipment Appraiser, Real Estate Agent

Real Estate Assessor
see Assessor

Real Estate Manager
see Property Manager

Real Property Appraiser
see Real Estate Appraiser

Realtime Reporter
see Legal and Realtime Reporter

Receptionist
see also Administrative Assistant, Health Information Management Professional, Hotel and Motel Desk Clerk

Reclamation Officer
see Land Agent

Recording/Sound Engineer
see also Lighting Technician, Television Audio/Video Operator

Recreation and Sport Administrator
see also Fitness Instructor, Management Consultant, Recreation Co-ordinator/Supervisor, Recreation Facility Operator, Sports Instructor, Volunteer Manager

Recreation Co-ordinator/Supervisor
see also Fitness Instructor, Human Ecologist, Kinesiologist, Occupational Therapist Assistant, Recreation and Sport Administrator, Recreation Therapist, Sports Instructor

Recreation Facility Operator
see also Building Operator, Recreation and Sport Administrator, Turfgrass Management Specialist

Recreation Therapist
see also Athletic Therapist, Expressive Arts Therapists, Gerontological Specialist, Kinesiologist, Occupational Therapist, Physiotherapist, Recreation Co-ordinator/Supervisor, Rehabilitation Practitioner

Recreation Vehicle Service Technician
see also Aircraft Maintenance Engineer, Appliance Service Technician. Electrician, Gasfitter, Refrigeration and Air Conditioning Mechanic, Sheet Metal Worker

Recruitment and Selection Officer
see Human Resources Professional

Recycling Truck Driver
see Municipal Recycling Truck Driver

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see points to the appropriate profile title ***see also*** suggests related profile title(s)

Recycling Waste Handler
see Municipal Recycling Waste Handler
Referee
see Sports Official
Refinery/Upgrader Process Operator
see also Field Production Operator, Gas Pipeline Operators and Maintenance Workers, Gas Plant Operator, Oil Pipeline Operators and Maintenance Workers, Pulpmill Operator
Reflexologist
see also Acupuncturist, Herbalist, Massage Therapist, Naturopathic Doctor, Podiatrist
Refrigeration and Air Conditioning Mechanic
see also Appliance Service Technician, Canadian Forces Personnel - Non Commissioned , Gasfitter, Instrument Technician, Plumber, Recreation Vehicle Service Technician, Sheet Metal Worker, Sprinkler Systems Installer, Steamfitter-Pipefitter, Transport Refrigeration Technician
Refuse Collector
see also Municipal Recycling Waste Handler, Refuse Truck Driver
Refuse Truck Driver
see also Municipal Recycling Truck Driver, Refuse Collector, Truck Driver
Regional Planner
see Urban, Regional and Park Planners
Registered Nurse
see also Canadian Forces Personnel - Commissioned Officer, Community Health Nurse, Licensed Practical Nurse, Mental Health Worker, Midwife, Nurse Practitioner, Occupational Health Nurse, Psychiatric Nurse, Respiratory Therapist
Regulatory Toxicologist
see Toxicologist
Rehabilitation Practitioner
see also Child and Youth Care Worker, Community Health Representative, Educational Assistant, Mental Health Worker, Occupational Therapist Assistant, Personal Care Attendant, Physical Therapy Assistant, Recreation Therapist
Religious Leader
Remote Sensing Engineer
see Geomatics/Surveying Engineer
Remote Sensing Technologist
see Mapping Technologist
Reporter
see also Announcer, Critic, Editor, Photographer, Technical Writer
Research Analyst
see Financial Analyst
Research Psychologist
see Psychologist
Residential Appraiser
see Real Estate Appraiser
Residential Manager
see Building Superintendent
Respiratory Therapist
see also Community Health Nurse, Diagnostic Medical Sonographer, Occupational Health Nurse, Radiation Therapist, Registered Nurse
Restaurant Manager
see also Accommodation Manager, Banquet Manager, Bartender, Caterer, Dietitian, Food and Beverage Service Supervisor In Formal Dining Rooms, Food Service Supervisor
Retail Manager
see Retail Store Manager
Retail Salesperson
see also Call Centre Agent, Cosmetician, Direct Distributor, Floral Designer, Interior Decorator, Optician, Postal/Wicket Clerk, Real Estate Agent, Retail Shelf Stocker, Retail Store Manager, Sales Representative (Wholesale, Nontechnical), Telemarketer
Retail Shelf Stocker
see also Cashier, Retail Salesperson, Retail Store Manager, Shipper and Receiver, Warehousing Professionals

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see points to the appropriate profile title ***see also*** suggests related profile title(s)

Retail Store Manager
see also Human Ecologist, Human Resources Professional, Marketing Manager, Retail Salesperson, Retail Shelf Stocker

Rig Technician
see also Drilling and Service Rig Managers, Drilling Rig Leasehand/Floorhand, Oil and Gas Well Loggers and Testers, Service Rig Personnel, Technical Sales Representative, Water Well Driller, Well Service Equipment Operator

Risk Assessment Toxicologist
see Toxicologist

Risk Manager
see Credit/Loans Manager

Robotics Technologist
see Automated Systems Technologist

Roofer
see also Carpenter, Floorcovering Installer, Glazier, Insulator, Painter and Decorator

Room/Housekeeping Attendant
see also Auto Detailer, Building Superintendent, Carpet and Upholstery Cleaner, Custodian, Domestic Housekeeper, Dry Cleaning and Laundry Workers, Executive Housekeeper, Guest Services Attendant

Rug Cleaner
see Carpet and Upholstery Cleaner

Safe and Vault Technician
see Locksmith

Safety Codes Officer
see also Carpenter, Electrician, Home Inspector, Occupational Health and Safety Inspector, Plumber, Power Engineer, Safety Officer, Steamfitter-Pipefitter

Safety Co-ordinator/Director
see Safety Officer

Safety Officer
see also Carpenter, Electrician, Heavy Equipment Technician, Occupational Health and Safety Inspector, Occupational Hygienist, Plumber, Power System Electrician, Safety Codes Officer, Underground Miner

Sailor
see Canadian Forces Personnel - Non Commissioned

Salad/Sandwich Maker
see Kitchen Helper and Food Assembler

Sales Broker
see Technical Sales Representative

Sales Clerk
see Retail Salesperson

Sales Manager
see Marketing Manager

Sales Representative (Wholesale, Nontechnical)
see also Advertising Account Executive, Auctioneer, Call Centre Agent, Cosmetician, Retail Salesperson, Technical Sales Representative

Sanitary Engineer
see Refuse Collector

Sanitation Truck Driver
see Refuse Truck Driver

Sawfiler
see also Machinist, Sawmill Machine Operator

Sawmill Machine Operator
see also Pulpmill Operator, Sawfiler

School Bus Driver
see Bus Driver

School Business Official
see also Accountant, Health Service Administrator, Human Resources Professional, Internal Auditor, Management Consultant, Municipal Administrator, Public Relations Representative, Purchasing Agent, Systems Auditor

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see points to the appropriate profile title ***see also*** suggests related profile title(s)

School Counsellor
see Educational Counsellor
Scientific Photographer
see Photographer
Scopist
see Legal and Realtime Reporter
Scraper Operator
see Heavy Equipment Operator
Script Writer
see Creative Writer
Scuba Diver
see Commercial Diver
Sculptor
see also Conservator, Craftsperson, Industrial Designer, Painter/Printmaker, Set Designer
Secondary School Teacher
see also Career and Technology Studies Teacher, College, Technical or Vocational Instructor, Elementary School Teacher, English as a Second Language Teacher - Adults, Private Trainer/Facilitator, Special Needs Teacher
Secretary
see Administrative Assistant
Securities Analyst
see Financial Analyst
Security Alarm Installer
see also Automobile Accessories Installer, Electrician, Locksmith
Security Guard
see also Bylaw Enforcement Officer, Customs Inspector, Police Officer, Private Investigator
Sedimentologist
see Geologist
Seed Cleaning/Conditioning Plant Manager
see also Agrologist, Grain and Forage Crop Producer
Seismic Helper
see Seismic Worker
Seismic Observer
see also Drilling and Service Rig Managers, Electronics Engineering Technologist, Geological and Geophysical Technologist, Petroleum Engineering Technologist, Seismic Worker
Seismic Supervisor
see Seismic Observer
Seismic Worker
see also Seismic Observer
Server
see Food and Beverage Server
Service Rig Manager
see Drilling and Service Rig Managers
Service Rig Personnel
see also Drilling and Service Rig Managers, Drilling Rig Leasehand/Floorhand, Oil and Gas Well Loggers and Testers, Rig Technician, Well Service Equipment Operator
Set Designer
see also Costume Designer, Craftsperson, Exhibit Designer, Lighting Designer, Painter/Printmaker, Sculptor, Stage Manager
Sheet Metal Worker
see also Aircraft Maintenance Engineer, Boilermaker, Recreation Vehicle Service Technician, Refrigeration and Air Conditioning Mechanic, Structural Steel and Plate Fitter
Shelf Stocker
see Retail Shelf Stocker
Shingle Installer
see Roofer
Shipper and Receiver
see also Furniture Mover, Mail Sorter, Parts Technician, Retail Shelf Stocker, Station Attendant/Ramp Service Agent, Warehousing Professionals

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see points to the appropriate profile title ***see also*** suggests related profile title(s)

Shooter (Seismic)
see Seismic Worker
Shooter Helper (Seismic)
see Seismic Worker
Sightseeing Tour Guide
see Tour Guide
Sign Language Interpreter
see also Interpreter, Translator
Silversmith
see Jeweller
Singer
see also Actor, Choral Conductor, Instrumental Musician, Songwriter
Site Administrator
see Webmaster
Site Designer
see Web Designer
Skidder Operator
see Logging/Forestry Equipment Operators
Skiing Instructor
see Sports Instructor
Skip Tracer
see Collection Agent
Slickline Operations Supervisor
see Wireline Field Supervisor
Small Business Manager/Owner
see Retail Store Manager
Soccer Player
see Professional Athlete
Social Anthropologist
see Anthropologist
Social Worker
see also Addictions Counsellor, Canadian Forces Personnel - Commissioned Officer, Career Development Professional, Child and Youth Care Worker, Community Health Representative, Correctional Services Worker, Expressive Arts Therapists, Family/Marriage Counsellor, Gerontological Specialist, Mediator, Mental Health Worker, Parole/Probation Officer, Psychiatric Nurse, Psychologist
Sociologist
see also Demographer, Political Scientist
Software Developer
see Computer Programmer
Software Engineer
see also Computer Engineer, Computer Programmer, Data Administrator, Information Systems Quality Assurance Analyst, Interactive Media Developer, Systems Auditor, Systems Tester, Web Designer
Soil Scientist
see also Agrologist, Chemist, Civil Engineer
Soldier
see Canadian Forces Personnel - Non Commissioned
Solicitor
see Lawyer
Solid Waste Auditor
see Environmental Auditor
Solid Waste Management Engineer
see Environmental Engineer
Songwriter
see also Advertising Copywriter, Choral Conductor, Composer, Creative Writer, Music Copyist, Orchestra/Band Conductor, Orchestrator/Arranger, Singer
Sonographer
see Diagnostic Medical Sonographer

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see points to the appropriate profile title ***see also*** suggests related profile title(s)

Sorter
see Dry Cleaning and Laundry Workers
Sound Engineer
see Recording/Sound Engineer
Spacecraft Design Engineer
see Aerospace Engineer
Special Event Co-ordinator
see also Banquet Manager, Caterer, Fundraiser, Home Economist, Human Ecologist, Volunteer Manager
Special Needs Teacher
see also Career and Technology Studies Teacher, Educational Counsellor, Elementary School Teacher, Psychologist, Secondary School Teacher
Specialist in Geriatric Medicine
see Geriatric Medicine Specialist
Speech Therapist
see Speech-Language Pathologist
Speech-Language Pathologist
see also Audiologist, Linguist, Speech-Language Pathologist Assistant
Speech-Language Pathologist Assistant
see also Dental Assistant, Educational Assistant, Hearing Aid Practitioner, Occupational Therapist Assistant, Ophthalmic Assistant, Physical Therapy Assistant, Speech-Language Pathologist
Sport Administrator
see Recreation and Sport Administrator
Sport Medicine Physician
see also Athletic Therapist, Kinesiologist, Naturopathic Doctor, Pediatrician, Physician, Physiotherapist
Sports Instructor
see also Fitness Instructor, Golf Professional, Recreation and Sport Administrator, Recreation Co-ordinator/Supervisor
Sports Official
see also Bylaw Enforcement Officer, Coach, Professional Athlete
Sportsfield Operator
see Recreation Facility Operator
Spotter
see Dry Cleaning and Laundry Workers
Sprinkler Systems Installer
see also Gasfitter, Instrument Technician, Plumber, Refrigeration and Air Conditioning Mechanic, Steamfitter-Pipefitter
Stable Worker
see Animal Care Attendant
Stage Manager
see also Casting Director, Lighting Technician, Producer - Film, Radio, Television and Theatre, Set Designer, Theatre Director
Stained Glass Artist
see Craftsperson
Star Researcher
see Astronomer
Station Attendant/Ramp Service Agent
see also Furniture Mover, Shipper and Receiver, Warehousing Professionals
Stationary Engineer
see Power Engineer
Statistician
see also Actuary, Demographer, Economist, Mathematician, Operations Research Analyst
Steam Engineer
see Power Engineer
Steamfitter-Pipefitter
see also Gas Utility Operator, Gasfitter, Instrument Technician, Plumber, Refrigeration and Air Conditioning Mechanic, Safety Codes Officer, Sprinkler Systems Installer

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see points to the appropriate profile title ***see also*** suggests related profile title(s)

Steel Detailer
see also Civil Engineering Technologist, Drafting Technician, Engineering Design and Drafting Technologist
Steel Worker
see Structural Steel and Plate Fitter
Sterile Processing Technician
see also Licensed Practical Nurse, Pharmacy Assistant/Technician
Steward/Stewardess
see Flight Attendant
Stockbroker
see Investment Advisor
Stonemason
see Bricklayer, Tilesetter
Store Clerk
see Retail Salesperson
Store Manager
see Retail Store Manager
Storyboard Artist
see Animator
Stratigrapher
see Geologist
Strip Mining Equipment Operator
see Surface Mining Equipment Operator
Structural Engineering Technician
see Drafting Technician
Structural Engineering Technologist
see Engineering Design and Drafting Technologist
Structural Steel and Plate Fitter
see also Boilermaker, Ironworker, Sheet Metal Worker, Welder
Substance Abuse Counsellor
see Addictions Counsellor
Subway Train Operator
see Bus Driver
Sugar Processing Machine Operator
see Agricultural Products Processing Machine Operator
Supermarket Clerk
see Retail Shelf Stocker
Supply Chain Manager
see Operations Manager
Supply Consultant
see Purchasing Agent
Supply Technician
see Canadian Forces Personnel - Non Commissioned
Surface Mine Blaster
see Blaster
Surface Mining Equipment Operator
see also Blaster, Heavy Equipment Operator, Truck Driver, Underground Miner
Surficial Geologist
see Geologist
Surgeon
see Physician
Surgical Processor
see Sterile Processing Technician
Surveying Engineer
see Geomatics/Surveying Engineer
Surveying Technologist
see Geomatics/Surveying Technologist
Swimming Instructor
see Sports Instructor

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see points to the appropriate profile title ***see also*** suggests related profile title(s)

Swimming Pool Operator
see Recreation Facility Operator
Swine Technician
see also Animal Care Attendant, Farm Worker/Technician, Livestock/Poultry Producer
Switcher
see Television Audio/Video Operator
Switchman
see Communication Technician
Systems Auditor
see also Accountant, Computer Programmer, Data Administrator, Database Analyst, Information Systems Consultant, Information Systems Quality Assurance Analyst, Internal Auditor, School Business Official, Software Engineer, Systems Security Analyst, Systems Tester, Web Designer, Webmaster
Systems Quality Analyst
see Information Systems Quality Assurance Analyst
Systems Security Analyst
see also Computer and Network Operator, Computer Programmer, Information Systems Consultant, Information Systems Quality Assurance Analyst, Systems Auditor, Systems Tester
Systems Tester
see also Computer and Network Operator, Computer Programmer, Customer Support Analyst, Database Analyst, Information Systems Quality Assurance Analyst, Interactive Media Developer, Software Engineer, Systems Auditor, Systems Security Analyst, Web Designer, Web Technician
Talent Scout
see Casting Director
Talk Show Host
see Announcer
Tank Farm Operator
see Oil Pipeline Operators and Maintenance Workers
Taxi Dispatcher
see Dispatcher
Taxi Driver
see also Bus Driver, Chauffeur, Dispatcher, Driving Instructor, Truck Driver
Teacher Assistant
see Educational Assistant
Teacher of Children with Visual Impairment
see Special Needs Teacher
Teacher of Deaf and Hard of Hearing Children
see Special Needs Teacher
Teacher of Gifted Children
see Special Needs Teacher
Teacher of Hospitalized, Homebound or Institutionalized Children
see Special Needs Teacher
Technical Illustrator
see Illustrator
Technical Instructor
see College, Technical or Vocational Instructor
Technical Sales Representative
see also Agrologist, Civil Engineering Technologist, Computer Engineer, Instrumentation Engineering Technologist, Mechanical Engineer, Rig Technician, Sales Representative (Wholesale, Nontechnical), Telecommunications Engineering Technologist
Technical Support Analyst
see Customer Support Analyst
Technical Writer
see also Creative Writer, Editor, Reporter

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see points to the appropriate profile title ***see also*** suggests related profile title(s)

Telecommunications Engineering Technologist
see also Broadcast Maintenance Technologist, Canadian Forces Personnel - Non Commissioned , Communication Technician, Electronics Engineering Technologist, Instrumentation Engineering Technologist, Technical Sales Representative

Telemarketer
see also Call Centre Agent, Direct Distributor, Retail Salesperson

Telephone Operator
see also Call Centre Agent

Telephone Solicitor
see Telemarketer

Television Announcer
see Announcer

Television Audio/Video Operator
see also Recording/Sound Engineer

Television Camera Operator
see also Cinematographer, Photographer

Television Producer
see Producer - Film, Radio, Television and Theatre

Television Repairer
see Electronic Technician

Television Reporter
see Reporter

Television Traffic Co-ordinator
see Traffic Co-ordinator

Teller
see Financial Customer Service Representative

Tennis Instructor
see Sports Instructor

Terminal Controller
see Air Traffic Controller

Terrazzo Worker
see Tilesetter

Theatre Critic
see Critic

Theatre Director
see also Casting Director, Choreographer, Film Director, Producer - Film, Radio, Television and Theatre, Stage Manager

Theatre Lighting Designer
see Lighting Designer

Theatre Lighting Technician
see Lighting Technician

Theatre Stage Manager
see Stage Manager

Theatrical Producer
see Producer - Film, Radio, Television and Theatre

Theoretical Physicist
see Physicist

Thermal Physicist
see Physicist

Tilesetter
see also Bricklayer, Concrete Finisher, Floorcovering Installer, Glazier, Lather-Interior Systems Mechanic, Plasterer

Time Study Technologist
see Industrial Engineering Technologist

Title Searcher/Examiner
see Land Titles Examiner

Tool and Die Maker
see also Industrial Designer, Machinist, Millwright, Plastics Processing Technician

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see points to the appropriate profile title ***see also*** suggests related profile title(s)

Tool Push
see Drilling and Service Rig Managers
Tour Director/Escort
see Travel Guide
Tour Guide
see also Casino Dealer, Heritage Interpreter, Outdoor Sport/Recreation Guide, Travel Guide
Tournament Professional
see Golf Professional
Tow Truck Dispatcher
see Dispatcher
Tower Controller
see Air Traffic Controller
Tower Crane Operator
see Crane and Hoisting Equipment Operator
Toxicologist
see also Agrologist, Biologist, Biotechnologist, Chemist, Ecologist, Food Scientist, Forensic Laboratory Analyst, Geneticist, Microbiologist, Pharmacologist, Physiologist
Trade Commissioner
see Foreign Service Officer
Traffic Co-ordinator
see also Dispatcher
Traffic Manager
see also Operations Manager, Truck Driver
Traffic Technician
see Canadian Forces Personnel - Non Commissioned
Transit Operator
see Bus Driver
Translator
see also Interpreter, Linguist, Sign Language Interpreter
Transport Refrigeration Technician
see also Mechanical Engineering Technologist, Railway Car Mechanic, Refrigeration and Air Conditioning Mechanic
Transportation Engineer
see Civil Engineer
Transportation Manager
see Traffic Manager
Travel Agent
see Travel Consultant
Travel Consultant
see also Flight Attendant, Travel Guide
Travel Guide
see also Outdoor Sport/Recreation Guide, Tour Guide, Travel Consultant
Tree Care Specialist
see Arborist
Tree Nursery Operator
see Nursery Operator
Tree Processor Operator
see Logging/Forestry Equipment Operators
Truck Accessories Installer
see Automobile Accessories Installer
Truck and Transport Mechanic
see Heavy Equipment Technician
Truck Body Repairer
see Auto Body Technician
Truck Camper Repairer
see Recreation Vehicle Service Technician

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see points to the appropriate profile title ***see also*** suggests related profile title(s)

Truck Driver
see also Bus Driver, Chauffeur, Driving Instructor, Messenger/Courier, Municipal Recycling Truck Driver, Refuse Truck Driver, Surface Mining Equipment Operator, Taxi Driver, Traffic Manager, Vending Machine Route Worker

Truck Driving Instructor
see Driving Instructor

Truck Mechanic
see Automotive Service Technician

Truck-Shovel Operator
see Surface Mining Equipment Operator

Truck-Trailer Mechanic
see Heavy Equipment Technician

Turfgrass Management Specialist
see also Arborist, Landscape Architectural Technologist, Landscape Gardener, Recreation Facility Operator

Ultrasound Technologist
see Diagnostic Medical Sonographer

Umpire
see Sports Official

Underground Mine Blaster
see Blaster

Underground Miner
see also Blaster, Heavy Equipment Operator, Safety Officer, Surface Mining Equipment Operator

Undertaker
see Funeral Director

Underwater Diver
see Commercial Diver

Unit Clerk
see also Administrative Assistant, Health Information Management Professional, Medical Secretary, Medical Transcriptionist

University Professor
see also College, Technical or Vocational Instructor

Upgrader Process Operator
see Refinery/Upgrader Process Operator

Upholsterer
see also Automobile Accessories Installer, Cabinetmaker

Upholstery Cleaner
see Carpet and Upholstery Cleaner

Urban Planner
see Urban, Regional and Park Planners

Urban, Regional and Park Planners
see also Civil Engineer, Engineering Design and Drafting Technologist, Land Surveyor, Landscape Architect

Urologist
see Physician

Utility Clerk
see also Collection Agent, Dispatcher

Vault Technician
see Locksmith

Vegetable Inspector
see Agricultural Commodity Inspector

Vending Machine Repairer
see also Appliance Service Technician, Electronic Technician, Office Equipment Technician, Vending Machine Route Worker

Vending Machine Route Worker
see also Messenger/Courier, Truck Driver, Vending Machine Repairer

Verbatim Shorthand Reporter
see Legal and Realtime Reporter

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see points to the appropriate profile title ***see also*** suggests related profile title(s)

Veterinarian
see also Animal Health Technologist
Veterinary Office Receptionist
see Receptionist
Veterinary Technician
see Animal Health Technologist
Veterinary Toxicologist
see Toxicologist
Vibrator Operator (Seismic)
see Seismic Worker
Videoconference Moderator
see Legal and Realtime Reporter
Videographer
see Cinematographer
Videotape Operator
see Television Audio/Video Operator
Videotape Post-Production Editor
see Television Audio/Video Operator
Violin Repairer
see Musical Instrument Repair Technician
Virologist
see Microbiologist
Visual Language Interpreter
see Sign Language Interpreter
Visual Merchandiser
see also Costume Designer, Exhibit Designer, Fashion Designer, Floral Designer, Interior Decorator
Visual Presentation Specialist
see Visual Merchandiser
Vocational College Instructor
see College, Technical or Vocational Instructor
Vocational Education Teacher
see Career and Technology Studies Teacher
Volcanologist
see Geologist
Volunteer Manager
see also Fundraiser, Home Economist, Human Ecologist, Human Resources Professional, Public Relations Representative, Recreation and Sport Administrator, Special Event Co-ordinator
Wage and Salary Administrator
see Human Resources Professional
Waiter/Waitress
see Food and Beverage Server
Ward Clerk
see Unit Clerk
Warehousing Professionals
see also Mail Sorter, Parts Technician, Retail Shelf Stocker, Shipper and Receiver, Station Attendant/Ramp Service Agent
Warewashing Attendant
see Kitchen Helper and Food Assembler
Watch Repairer
see also Jeweller
Watchmaker
see Watch Repairer
Water and Wastewater Engineer
see Environmental Engineer
Water and Wastewater Treatment Plant Operator
see also Chemical Engineering Technologist, Chemical Technologist, Hazardous Waste Management Technologist, Hydrometric Technician/Technologist

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see points to the appropriate profile title ***see also*** suggests related profile title(s)

Water Quality Auditor
see Environmental Auditor
Water Quality Techologist
see Pollution Control Technologist
Water Scientist
see Hydrologist
Water Source Engineer
see Civil Engineer
Water Well Driller
see also Blaster, Crane and Hoisting Equipment Operator, Rig Technician
Weather Forecaster
see Meteorologist
Weaver
see Craftsperson
Web Designer
see also Computer and Network Operator, Computer Programmer, Customer Support Analyst, Data Administrator, Database Analyst, Graphic Designer, Information Systems Quality Assurance Analyst, Interactive Media Developer, Software Engineer, Systems Auditor, Systems Tester, Web Technician, Webmaster
Web Portal Co-ordinator
see Webmaster
Web Technician
see also Computer and Network Operator, Computer Programmer, Customer Support Analyst, Interactive Media Developer, Systems Tester, Web Designer, Webmaster
Webmaster
see also Customer Support Analyst, Data Administrator, Information Systems Quality Assurance Analyst, Librarian, Library Technician, Marketing Manager, Public Relations Representative, Systems Auditor, Web Designer, Web Technician
Weight Instructor
see Fitness Instructor
Welder
see also Boilermaker, Career and Technology Studies Teacher, Commercial Diver, Heavy Equipment Technician, Ironworker, Machinist, Millwright, Structural Steel and Plate Fitter
Welding Engineer
see Materials/Metallurgical Engineer
Welding Engineering Technologist
see Materials Engineering Technologist
Well Service Equipment Operator
see also Blaster, Crane and Hoisting Equipment Operator, Drilling and Service Rig Managers, Drilling Rig Leasehand/Floorhand, Heavy Equipment Operator, Oil and Gas Well Loggers and Testers, Rig Technician, Service Rig Personnel
Whitewater Rafting Guide
see Outdoor Sport/Recreation Guide
Wicket Clerk
see Postal/Wicket Clerk
Wildland Firefighter
see also Firefighter, Forest Technician
Wildlife Biologist
see Biologist
Wildlife Conservation Officer
see Fish and Wildlife Officer
Wildlife Park Attendant
see Animal Care Attendant
Wireline Field Supervisor
see also Drilling and Service Rig Managers, Oil and Gas Well Loggers and Testers
Wireline Operator
see Oil and Gas Well Loggers and Testers

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see points to the appropriate profile title ***see also*** suggests related profile title(s)

Word Processing Operator
see also Administrative Assistant, Health Information Management Professional, Legal and Realtime Reporter, Legal Secretary, Medical Transcriptionist, Paralegal, Pre-Press Technician

Workshop Instructor
see Private Trainer/Facilitator

World Wide Web Site Administrator
see Webmaster

World Wide Web Site Designer
see Web Designer

Youth Care Worker
see Child and Youth Care Worker

Zookeeper
see Animal Care Attendant

Zoologist
see Biologist

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see points to the appropriate profile title ***see also*** suggests related profile title(s)